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February 2001

Fire Management Plan

for the

Bureau of Land Management

El Malpais National Conservation Area

and

National Park Service

El Malpais National Monument

2002-005207/NF
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FIRE MANAGEMENT PLAN

for the

Bureau of Land Management

El Malpais National Conservation Area

and

National Park Service

El Malpais National Monument

New Mexico

December 2000

EXECUTIVE SUMMARY

The Fire management policies of the Bureau of Land Management (BLM) and National Park Service (NPS), Department of Interior, support agency resource management goals. An overriding resource goal is the restoration or maintenance of natural ecosystems while providing for firefighter and public safety, protection of natural and cultural resources, and human developments from unwanted wildland fire.

This Joint Fire Management Plan (referred to as "the Plan" or "Joint Plan") for the El Malpais National Conservation Area and El Malpais National Monument has the following program direction.

- Guide a joint agency decision-making process in which safety, social, political, and resource values are evaluated and appropriate management response strategies are identified for wildland fires in all Fire Management Units while providing for a full suppression response strategy for all unwanted wildland fires
- Provide a framework for hazard fuels management strategies and for restoring wildland fire back into fire-dependent ecosystems
- Provide an interagency platform with which to cooperate more fully in planning and implementing a wildland fire program across agency boundaries

The program operations included in the Plan are presuppression, prevention, suppression, fuels management, and wildland fire use to achieve resource benefits (accomplish objectives). Applicable resource goals and objectives are lifted from approved agency resource and general management plans. The Plan is unique in that it is truly interagency in purpose, scope, objectives, and guidelines. It integrates those areas where policies and agency goals coincide while allowing agency-specific program elements to be integrated as well. For any policy differences that may emerge, there is provision in the Plan for a joint agency forum approach whereby appropriate and timely communications are fostered and consensus reached.

The Plan is organized to combine the latest scientific knowledge, including regional and local studies, with a hierarchy of policy direction, from Departmental and Agency to the Interagency Wildland and Prescribed Fire Management Policy (1995) to accomplish resource and fire management goals and objectives. It was written to be understood and implemented by BLM and NPS fire and resource management staffs and is primarily operational in nature.

The compliance requirements for the guidelines contained in the National Environmental Policy Act have been satisfied through the development of an Environmental Assessment, which is appended to this plan. These requirements ensure a prudent assessment and a balance between a federal action and any potential effects of that action, leading to consensus between fire managers, agency resource specialists, and the public regarding this interagency fire program. Any constraints or limitations imposed on the fire management program also are included.

MAR 0 1 2001

United States Department of the Interior

Bureau Land Management
Albuquerque Field Office
435 Montano Rd. NE.
Albuquerque NM. 87197

National Park Service
El Malpais National Monument
123 East Roosevelt Ave.
Grants NM. 87020

February 6, 2001

Dear Reader,
Enclosed for you review is the Proposed El Malpais Joint Fire Management Plan (FMP) and Environmental Assessment. (EA).

The purpose of the Environment Assessment is for the National Park Service (NPS), El Malpais National Monument, and the Bureau of Land Management (BLM), National Conservation Area and other adjoining BLM lands, to jointly assess effects to the natural and human environment resulting from the implementation of a Joint Fire Management Plan.

If you have written comments please send them to one of the following offices:

Bureau of Land Management
Albuquerque Field Office
Attention: Ed Singleton
425 Montano Rd. NE
Albuquerque NM 87107

National Park Service
El Malpais National Monument
Attention: John Luhan
123 East Roosevelt Ave.
Grants, NM. 87020

Comments must be received by March 6, 2001.

Sincerely,

Edwin J. Singleton

Edwin J. Singleton
Field Manager

John Lujan
Superintendent

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REVIEW COPY

Fire Management Plan for the
Bureau of Land Management El Malpais National Conservation Area and
National Park Service El Malpais National Monument
New Mexico

1.0 INTRODUCTION

Agencies within the Department of Interior (DOI) with vegetation capable of sustaining wildland fire are required to prepare fire management plans. The Bureau of Land Management (BLM) and the National Park Service (NPS), termed here "the agencies," have recognized and acted on this policy direction. The need for interagency coordination and collaboration has been reflected in the development of this Joint Fire Management Plan ("Joint Plan" or "the Plan").

The Plan provides a framework for the joint management of wildland and prescribed fire as a tool to safely accomplish protection and resource management objectives on BLM and NPS lands. The lands include those occupied by the El Malpais National Conservation Area (NCA) and El Malpais National Monument in western New Mexico (see the vicinity map in Fig. 1). The BLM manages 262,100 acres of federal land, and the lands encompass 114,272 acres for a total of 376,372 acres.

The Plan meets the National Environmental Policy Act (NEPA) and the requirements of the National Historic Preservation Act (NHPA), the Endangered Species Act, the Clean Air Act and Amendments, and the Clean Water Act.

The Federal Wildland Fire Management Policy (1995) provides the overall framework for agencies to build a program consistent with stated land and resource goals and objectives while ensuring firefighter and public safety. Specific agency authorities for implementing this Plan are discussed in Sec. 2.0.

2.0 COMPLIANCE WITH POLICY AND RELATION TO OTHER PLANS

The Plan conforms to the Federal Wildland Fire Management Policy and Program Review of 1995, which establishes direction for this program. Three critical departures from previous fire policy are that (1) all ignitions occurring in wildland areas are classified as wildland or prescribed fires, (2) all wildland fires are managed with the appropriate management response as outlined in this Plan and analysis of the specific situation, and (3) these fires can be managed entirely or in any part for resource benefits or receive suppression actions to minimize burned area because of high values to be protected, threats to life or property, or other social, political, and economic considerations that outweigh potential environmental benefits. These policy directives form the basis of operational protocols and strategies addressed throughout this Plan.

An Environmental Assessment (EA) serves as documentation that analyzes environmental impacts pursuant to proposed strategies detailed in this Plan, per NEPA (1969). As such, the EA is programmatic in that it satisfies the need for the development of NEPA documentation for individual projects under this Plan.

In addition to DOI Departmental Manual (910 DM), the agency policies and related management plans for which this Plan is tiered are described below.

2.1 Bureau of Land Management

Enabling legislation created the El Malpais NCA via P.L.100-225 on December 31, 1987. Congressional designation of the area as an "NCA" requires the BLM to manage the area's resources with a "…higher order of protection than that followed on other multiple use lands…" (USDI BLM 1999). The Bureau prepared a General Management Plan (GMP) and EA between 1988 and 1991. The GMP/EA was appealed in favor of current preparation of a Draft El Malpais Plan and Environmental Impact Statement (EIS) (1999).

Vicinity

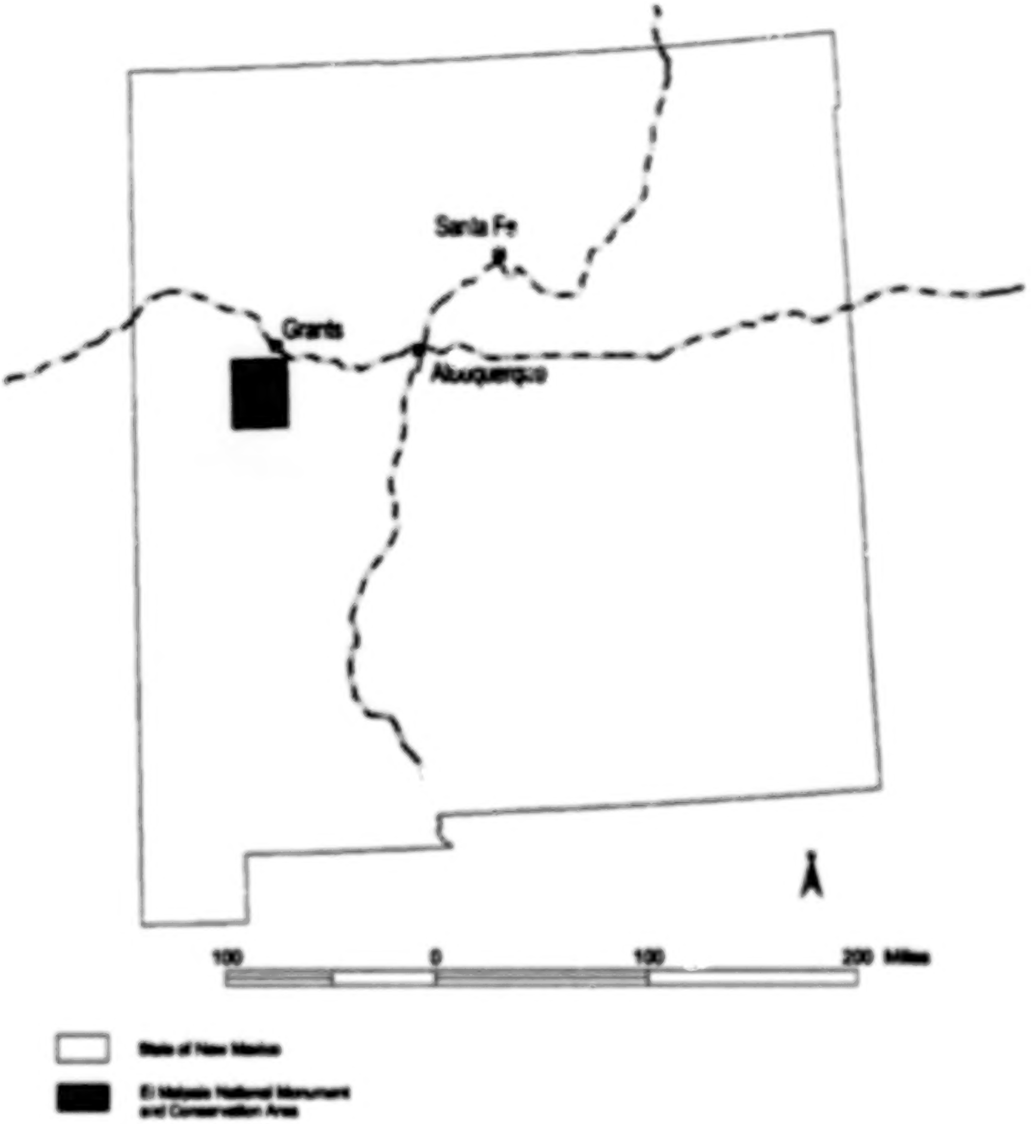

Fig. 1. Vicinity Map.

No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

Further policy authority lies with the Federal Land Policy and Management Act (FLMPA), which provides overall policy direction for the BLM Albuquerque Field Office.

The NCA supports a varied landscape within its boundaries of 262,100 acres. The West Malpais Wilderness (approximately 39,800 acres), where volcanic landscapes with flows exceeding 800,000 years in age, is found in the NCA. Other features include cinder cones, forested mesas, canyons, buttes, and wide grassy valleys. For BLM fire management, the following legal and policy documents are listed.

- BLM Bureau Manual 9200
- BLM Standards for Fire Operations (1999)
- BLM Draft Prescribed Fire Management Handbook (H-9214-1)
- BLM Fire Management Planning Handbook (H-9211-1)
- P.L. 100-225 El Malpais National Conservation Area (1987)
- BLM Standards for Fire and Aviation Operations (1999)
- BLM Management of Designated Wilderness Areas (8560)

2.2 National Park Service

Authority for the NPS portion of the Plan is legislation creating El Malpais National Monument (P.L. 100-22), December 31, 1987, which states the following purpose.

> *"The Secretary of Interior shall protect, manage, and administer the Monument for the purpose of preserving the scenery and the natural, historic, and cultural resources of the Monument and providing for the public understanding and enjoyment of the same in such a manner to perpetuate these qualities for future generations"*

NPS fire management policy (DO-18, RM-18) outlines the agency-specific program direction for all units of the National Park System. Additional NPS policy references include

- NPS Director's Order 41 and
- Reference Manual 41, Preservation and Management of Wilderness.

Common to both agencies are the following.

- Federal Wildland Fire Policy (1995)
- Interagency Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide (1998)
- DOI Departmental Manual (910 DM)

2.3 Relation to Other Plans

For the BLM, several land management plans tiered to agency policies, the *El Malpais Plan and Environmental Impact Statement* (Draft 1999) and portions of the *Rio Puerco Resource Management Plan* (1992), provide fire-related resource goals.

NPS planning documents affecting the Joint FMP are the Monument *General Management Plan, Environmental Assessment, Wilderness Suitability Study* (1990) and *the Resource Management Plan, El Malpais NM* (1997). Fire-related resource management goals (Sec/ 4.0) were referenced from these plans.

3.0 DESCRIPTION OF AREA

The area covered by this Plan lies on the southeastern edge of the Colorado Plateau in western New Mexico (see the vicinity map in Fig. 1) and is generally 70 air miles west of Albuquerque, New Mexico, and 15 air miles south of Grants, New Mexico.

The NCA and National Monument encompass approximately 376,372 acres (USDI, 1999; USDI, 1993). With a few exceptions, the NCA roughly surrounds Monument lands, with approximately 80 miles of common boundary. Private land tracts are checkerboarded and interspersed throughout the NCA and National Monument, comprising in-holdings and adjoining tracts. The eastern boundary of the NCA is mainly Acoma Reservation, the southern boundary is primarily private lands bounded on the west by Ramah Navajo Reservation, and the northern boundary is the Cibola National Forest and private lands (see the land ownership map in Fig. 2).

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Typical of southwestern landscapes, the El Malpais ("the badlands") is a land of extremes, including mountains, foothills, mesas, canyons, rugged lava flows and cinder cones, and open ranges. Detailed descriptions of vegetation and other resources are in Secs. 5.0 and 6.0.

Climatic extremes are reflected by a complex variety of vegetation, and therefore animal distributions. Water availability varies from sparse to relatively abundant over the course of a year. Precipitation averages 12 inches annually, with August being the wettest with an average of 2.5 inches of rain and April-May the driest (0.35-0.42 inches per year) (USDI, 1999). Temperatures can be as variable; the average summer temperature is 70°F., whereas the lowest daily average occurs in January at 32°F. A temperature of 93°F has been recorded on exposed rock (Lindsey 1951).

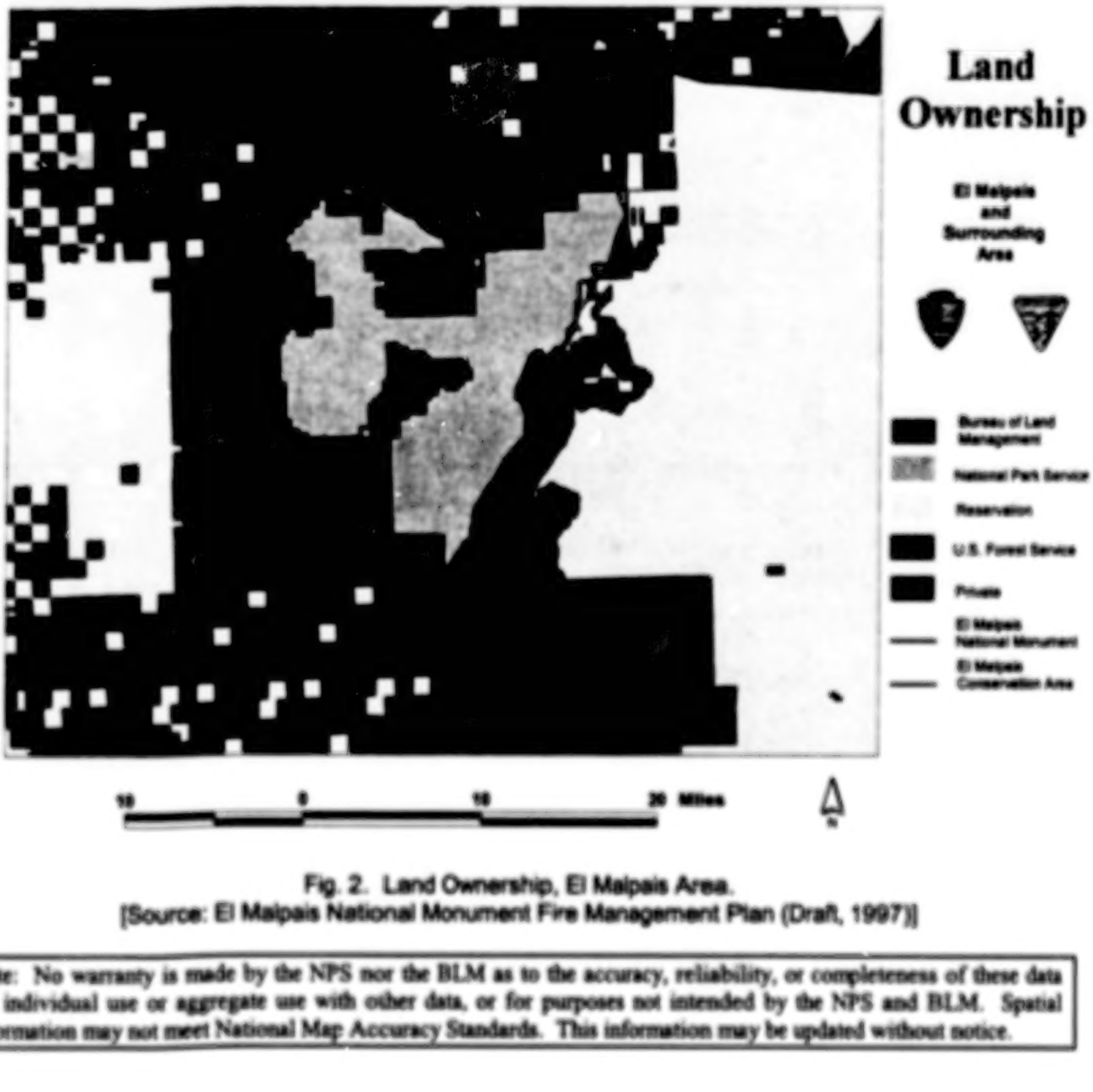
Land Ownership
El Malpais and Surrounding Area
Bureau of Land Management
National Park Service
Reservation
U.S. Forest Service
Private
El Malpais National Monument
El Malpais Conservation Area
10
0
10
20 Miles
N

Fig. 2. Land Ownership, El Malpais Area.
[Source: El Malpais National Monument Fire Management Plan (Draft, 1997)]

Note: No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

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3.1 El Malpais National Conservation Area

The NCA contains three administrative units and additional special designated tracts, which are listed in Table 1 by approximate acreage and ownership. The entire NCA is located within Cibola County, New Mexico. Note that outside-NCA acres also are included in Table 1 to illustrate the total fire management planning acres.

Table 1
Acreage[1] (by Ownership) for the El Malpais NCA and Outside the NCA

UNIT	BLM	PRIVATE	INDIAN	TOTAL
Within NCA:				
CEBOLLA WILDERNESS	61,500	300	200	**62,000**
WEST MALPAIS WILDER.	39,300	500	0	**39,800**
CHAIN OF CRATERS WSA	18,300	0	0	**18,300**
BRAZO	28,700	900	0	**29,600**
BREAKS	6,500	0	0	**6,500**
CERRITOS DE JASPE	9,200	3,500	0	**12,700**
CERRO BRILLANTE	34,400	1,700	0	**36,100**
CONTINENTAL DIVIDE	17,500	6,800	0	**24,300**
NECK	6,100	20,300	800	**27,200**
SPUR	4,500	300	800	**5,600**
TOTAL NCA	226,000[2]	34,300	1,800	**262,100**
OUTSIDE NCA:				
BRAZO NON-NCA	10,400	1,700	0	**12,100**
BREAKS NON-NCA	11,600	500	0	**12,100**
CERRO BRILLANTE-AFO	0	2,000	0	**2,000**
CONTINENTAL DIVIDE -AFO	2,000	0	0	**2,000**
TOTAL OUTSIDE NCA	33,000	4,200	0	**28,200**

The Cebolla Wilderness is located along the east side of New Mexico Route 117, and the West Malpais Wilderness is situated north and east of County Road 42 and southwest of the National Monument. The total acreage between these two wilderness areas is 101,800 acres.

3.2 El Malpais National Monument

The Monument encompasses 114,272 acres of diverse volcanic-derived landscape, with 10 major volcanic vents (most in the form of cinder cones), 7 contiguous lava flows (see below), and some of the longest lava tube systems in the country. Several ice caves located within the Monument attracted early Native Americans, as well as troops from nearby Fort Wingate as early as the 1860s (Mangum 1990). These caves were formed from fractures and voids in the flows containing small perched water tables that have frozen and support unique flora and fauna.

Lava flows are classified primarily by age. The seven flows are listed below for reference.

- McCartys @ 32,000 acres; <3,200 years
- Bandera @ 21,000 acres; <11,000 years
- Hoya @ 26,000 acres; >30,000 years

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[1] Acreages rounded to nearest 100 acres; from Table 1-1, Draft *El Malpais Plan and Environmental Impact Statement* (1999).
[2] Subsequent acquisition of public land in Cibola County adds 26,200 acres to the total for the NCA.

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- Twin Craters Complex @ 12,000 acres; <16,000 years
- El Caulderon @ 4,000 acres; >100,000 years
- Rendija @ 2,500 acres; >250,000 years
- Old Basalt Complex @ 5,000 acres; >500,000 years

Additional and more detailed information regarding these geologic features can be found in the El Malpais National Monument GMP and the Resource Management Plan (RMP).

The park and its lava flows are contained within a closed basin. All precipitation entering the area is either used by vegetation or sinks into the lava flow and enters the groundwater system. A large reservoir of subsurface water is believed to be present at depth beneath the lava. One of the only places where this unit of saturation may surface is on the northern edge of El Malpais National Monument at the Rio San Jose and the associated springs and seeps.

Cultural features include the remains of five tribes along with evidences of Spanish, Mexican, and modern exploration and exploitation.

4.0 JOINT AGENCY GOALS AND OBJECTIVES

The fire management goals below are taken from the applicable policies and resource objectives written in approved plans (see above) and fire management objectives or strategies that support the accomplishment of the stated goals.

Goal: Ensure firefighter and public safety from all wildland fire within all Fire Management Units (FMUs)

Objectives

1. All fire personnel will comply with the National Wildfire Coordinating Group (NWCG) and agency fitness requirements and will have personal protective equipment appropriate to the job or assignment.
2. Qualifications and staff experience necessary to accomplish fire management program objectives in a safe manner will be established and promoted.
3. All safety standards and guidelines identified within the Interagency Incident Business Management Handbook will be followed.
4. The Job Hazard Analysis (JHA) process will be used for all potentially hazardous fire management activities.

Goal: Reduce wildland fire hazard around developed areas and around identified cultural sites

Objectives

1. Create defensible space around identified federal improvements within all FMUs.
2. Apply mechanical fuel reduction and prescribed fire where applicable around vulnerable prehistoric and historic resources to reduce damage from wildland fire.

Goal: Prevent human-caused wildland fires on joint agency lands

Objectives

1. Integrate existing and revised agency prevention plans to the degree possible.
2. Establish a joint fire management website containing appropriate safety messages.

Goal: Suppress all unwanted wildland fires with minimum cost, using an appropriate suppression response, while protecting values at risk

Objectives

1. Manage a joint wildland suppression program that prevents unacceptable loss from fire annually.
2. `Suppress all wildland fires that do not meet resource objectives.

Goal: Establish or update cooperative agreements to maximize coordination with agencies' cooperators.

Objectives

1. Review all existing agreements annually, updating or changing them as necessary to promote full cooperation in mutual fire management.
2. Coordinate with the US Forest Service (USFS), Acoma and Ramah Navajo Agencies and Tribes, local governments, and homeowners' associations to maximize human and resource protection.

Goal: Use approved fire use and surrogate fire treatments to restore and maintain primary natural resources and their processes where applicable[3]

Objectives

1. **Ponderosa pine**
   Establish and maintain a vegetative structure and mosaic within the natural range of variability for southwestern ponderosa pine forest ecosystems as determined from fire ecology and historical research and also to prevent unwanted crownfire.

2. **Pinyon-juniper woodland**
   Establish and maintain a vegetative structure and mosaic within the natural range of variability for southwestern pinyon-juniper woodlands as determined from fire ecology and historical research and also to prevent unwanted crownfire.

3. **Grasslands**
   Restore fire as a keystone natural process that encourages native grassland ecosystems.

4. **All types**
   Reduce established noxious and non-native plant cover.

5. **BLM**
   Within wilderness, manage wildland fires under prescription to the greatest extent possible and use prescribed fires only in areas where reducing hazard fuels accumulations is a priority to protect human life, property, or high-value resources from catastrophic fires.

6. **BLM**
   Improve wildlife habitat and watershed values.

Goal: Foster public awareness and support of the fire management program.

Objectives

1. Develop a network of key local and area contacts and designate an interagency spokesperson to coordinate joint interagency fire information in a timely and accurate manner.
2. Develop a joint-agency fire management website to display relevant fire materials, the latest research, and program updates.

Goal: Protect air-quality-related values across all affected airsheds in the area.

Objectives/Strategies

1. Include mitigation measures to protect air-quality values in all prescribed fire burnplans.
2. Consider air-quality impacts for all wildland and prescribed fires within go/no-go decisions.
3. Consider alternatives to fire use strategies in Wildland Fire Situation Analyses where air quality may be adversely impacted.

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[3] Objectives 1, 2, and 3 are from approved NPS FMH-4 objectives for El Malpais National Monument (see Sec. 6.2).

Goal: In a cumulative manner, develop a body of scientific knowledge of the role of fire in ecosystems managed by the joint agencies for purposes of public education and adaptive fire mangement.

Objectives/Strategies

1. Monitor, evaluate, and report on the effects of fire (and non-fire) treatments on biotic systems, air and water quality, and cultural resources and quantify the overall effectiveness of these activities to improve the program.
2. Facilitate/continue a practical, management-oriented scientific investigation on the role of fire in Monument and NCA ecosystems.

5.0 HISTORIC ROLE OF FIRE

This landscape supports a complex pattern of open areas, ponderosa pine forests, pinyon-juniper woodlands, and grasslands.

Based on existing resource documents from El Malpais National Monument, the general vegetation types or associations[4] are the following..

- Douglas fir/Rocky Mountain juniper/ponderosa pine
- Ponderosa pine/native grassland
- Dwarf ponderosa pine/one-seed juniper/Pinyon pine/Apache plume
- Ponderosa pine savanna
- Blue gramma grassland (grass or grass/shrub, Great Basin grassland)
- Pinyon-juniper woodland

The BLM maintains a vegetative type classification based on "Biophysical Land Units" (BLUs), which are relatively homogeneous areas defined by lithology, surface drainage, soil type, vegetation cover, and land use (USDI BLM 1990). Based on the 12 BLUs, the agency recognizes 8 vegetative cover types.

- Sparse/barren
- Grass/shrubland
- Shrub/conifer woodland
- Mixed conifer
- Pinyon/juniper
- Deciduous thickets
- Ponderosa parkland
- Pygmy shrub/shrubland/lava complex

Most of the early fire-adapted vegetative communities have become altered from combinations of human use, early fire suppression, and climate change. Species compositions, such as the more open grasslands that existed before the 1900s, have changed to grass-shrub communities and pinyon-juniper woodland with understories of non-native exotics.

The pre-settlement fire regime (before 1880), where naturally recurring fire disturbances kept surface fuel loadings low and trees open with grassy understories, became severely disrupted with the onset of 20th century fire suppression policies. These repeated, historic, low-intensity surface fires, which drove important ecological processes, including maintenance of native plant communities, in the southwest, were ended abruptly before the turn of the 20th century (Bennett 1974, Dieterich 1983, Swetnam and Baisan 1994, Wolf and Nast 1998).

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[4] See also Sec. 6.2, Monitoring Types for El Malpais National Monument.

El Malpais National Monument (and assumed also within the majority of the NCA) contains numerous and well-preserved fire-scarred samples that were used to develop multi-centennial fire chronologies over a wide geographic area. Henri Grissino-Mayer, reporting in a dissertation titled *Tree-Ring Reconstructions of Climate and Fire History at El Malpais National Monument, New Mexico,* reports that wildfire was a common phenomenon in malpais forests since at least AD 1350. At the site level, fires (before 1880) occurred approximately once every 5 to 12 years. Minimal intervals ranged between 1 and 3 years, and maximum intervals ranged between 12 and 55 years. At the regional level, Grissino-Mayer reports that fires occurred somewhere within the study boundaries approximately once every 2 years.

However, fire regimes are dynamic systems that respond to a variety of factors over time, such as fuel types and amounts and climatic and human factors. Again, Grissino-Mayer (1995) suggests that for maximizing the natural fire regime within the range of variability described, parameters of reconstructed regimes during the 1795–1880 period should be followed. This is largely because of similar climatic conditions with the 20th century.

Grissino-Mayer (1995) reports that there was a major change in fire regimes in the malpais region *ca.* 1940, which is thought to reflect intensive and successful fire suppression efforts by land agencies. Before this time, fires in the often rugged and inaccessible sites received less attention, and therefore, suppression was less effective. Early grazing practices may have affected fire-carrying grasses, often resulting in minimal spread. However, woody fuels and litter began to accumulate.

Consequently, many of today's fires behave much more erratically and intensely, particularly following above-average precipitation years when surface herbaceous and shrub densities increase. Often these fires destroy overstory, midstory, and understory; surface plant cover; stored seed and reproductive components; and soil microorganisms. Firefighters attempting to protect resource and human values by attempting aggressive suppression action are often placed at risk of injury and/or loss of life.

6.0 WILDLAND FIRE MANAGEMENT SITUATION

The two agency ownerships are generally related in terms of climate and fire seasonal patterns and fuels and fire behavior characteristics across the landscape. The following sections describe the current fire environment situation, which will serve as background information in the development of joint strategies found in Sec. 7.

6.1 Historical Weather Analysis

Grissino-Mayer includes a comprehensive climatic trend analysis in his dissertation (1995). He notes the following periods in history (covering 2,129 years) that relate to the pattern of early fire across the malpais landscape.

- A 43-year period of below normal rainfall (AD 1566–1608); 12.86 inches per year average
- A short-term drought between AD 1727–1742
- A short-term drought between 1899–1904
- The "Great Drought" that occurred between 1271–1297
- The wettest short-term period, which occurred between AD 570–608, averaging 16.65 inches
- The highest average precipitation of any short term period, which was 17.66 inches between AD 1975–1992

Grissino-Mayer's work skillfully relates these "cyclic" events to large-scale (or low-acreage) fire events in history, giving managers a framework from which to develop fire treatment and preparedness strategies.

Weather patterns in the NCA and Monument are typical of the semi-arid southwest. Variations in precipitation and temperature are wide, with precipitation varying from 9 to 18 inches per year (USDI NPS 1992). Winter precipitation, usually in the form of snow, normally occurs between November and March. However, much of this is dry and

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lacks appreciable moisture within the joint planning area. Spring and summer rains often contribute the majority of annual precipitation and thus fire danger. Spring rains (from March through May) significantly contribute to the severity of the summer fire season. The climatic patterns of El Niño and La Niña events have been found to be highly influential on southwestern weather; the former produces above-average precipitation and the latter produces more severe fire seasons. Lightning events may begin as early as April, with sporadic "dry" thunderstorms occurring into the "monsoon" season (July and August), when storms are often violent with heavy local precipitation.

A phenomenon thought to have an influence on the intensity and strength of summertime thunderstorms over this area are the lava flows themselves. The black, heat-absorbing capabilities of these landforms often result in severe "monsoonal" storm patterns over the malpais.

Temperatures vary according to elevation across the area, with daytime highs often exceeding 100° F during May and June. Fall months are typically warm during the day with cool to cold nighttime temperatures.

Winds are the highest during spring months, when winter frontal systems normally pass north of the area and produce only winds locally. Windbspeeds exceeding 30-40 mph are not uncommon during March, April, and May.

6.2 Fuels and Fire Behavior Characteristics

Both the NCA and Monument support a variety of fuel types. They include grass, sage, sage/grass, piñyon/juniper, oakbrush/grass, ponderosa pine and ponderosa pine/mixed-conifer. The following table represents best available information on fuels complexes within the joint planning area:

Table 2 presents an overall view of fuels on an area-wide basis. Fuel classifications are further detailed within each FMU discussed in Sec. 7.2. An overall inventory of fuel loads by FBPS model has yet to be completed for the joint planning area. However, using the Photo Series (USDA 1990) for ponderosa pine gives estimates of total down and dead fuel loadings ranging from 1.5 to 26 tons/acre, depending on elevation, site, and other variables.

Table 2
Fuel Groups and Models, Area (in Acres and Per Cent of Total by Agency)

FUEL GROUP	FUEL MODEL(S) – FBPS[5]	[6]AREA (ACRES)/PER CENT OF TOTAL (by Agency)
TIMBER/LITTER	2,8, 9	14,600 NPS (8%)
		137,600 BLM (52%)
GRASS-SHRUB	2,6	3,000 NPS (3%)
		106,100 BLM (40%)
OTHER (NON FUEL)	N/A	10,300 NPS (8%)
		13,300 BLM (6%)
UNCLASSIFIED		90,948 NPS (89%)
		5,100 BLM (2%)
TOTAL		118,848 NPS
		262,100 BLM

For the NCA, those areas that were once open savannah have experienced an increase in pinyon-juniper density. Many of these areas have passed the threshold where there is no longer enough fine fuel (herbaceous material) to move fire across the landscape. Grassland composition also has changed. Where blue gramma once composed 70% of herbaceous species, its composition, now is 90%. When densities of overstory pinyon-juniper are thinned, the additional sunlight created on the ground surface will contribute to stimulating herbaceous cover, which in turn will increase the ability of these savannahs to become fire-maintained in the long-term.

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[5] Fire Behavior Prediction System.

[6] Estimates from USDI, BLM Draft EIS (1999), Table 3-11 and USDI, NPS Fire Management Plan (1992).

The best available fire management information for the purpose of fuels treatments addressed in the Joint Plan is found in the Monitoring Type Description Sheets (FMH-4) for El Malpais National Monument. The National Park Service Fire Effects Monitoring Program describes major cover types as "Monitoring Types" and includes resource goals and fire treatment objectives, target conditions (desired future condition), burn prescriptions, and monitoring type variables for each type. This information is detailed in Appendix G (Monitoring Types). The following monitoring types have been established for El Malpais National Monument and generally are apoplicable to NCA lands. Typical fire behavior characteristics are listed for comparison, represented by the three monitoring types:

Ponderosa pine (Timber/Litter, and Grass Fuel Group); Code FPIPO1T02

Fuel Model	Rate of Spread (ch/hr)	Flame Lengths (ft)	Fire Characteristics[7]
FBPS 9	7 – 25	2.0 – 5.3	Surface fires only; potential for independent crownfire at high wind speeds.

Pinyon-juniper woodland (Timber/Litter Fuel Group); Code FJUMO1T06

Fuel Model	Rate of Spread (ch/hr)	Flame Lengths (ft)	Fire Characteristics
FBPS 8	2 – 5	0.9 – 1.9	Only under low-wind conditions.
FBPS 6	28 – 83	4.7 – 10	Only under closed-canopy conditions.

Grasslands (Grass Fuel Group); Code FBOGR1T02

Fuel Model	Rate of Spread (ch/hr)	Flame Lengths (ft)	Fire Characteristics
FBPS 1	0 – 311	0 – 8.4	Fires burn out quickly
FBPS 2	0 – 103	0 – 11	Continuous and rapid spread under high-wind conditions.

For the National Monument, the critical fuels, and thus potential control problems, lie in the area of Lost Woman Crater, where large fires are of the highest probability to occur because of heavier surface loads (largely Ponderosa pine/mixed conifer). The largest fire in recorded park modern history was 10,000 acres. Much of this acreage burned through old decadent logging slash, creating high intensities with high resistance to control. Another area containing residual activity fuels along with closing canopy second-growth Ponderosa/ mixed conifer is Cerro Bandera. Private lands with increasing numbers of residences scattered nearby exacerbate the potential for high-intensity crownfires.

6.3 Fire Season

According to NPS FIREPRO III Base Analysis for El Malpais National Monument, the composite "statistical" fire season can be defined represented by wildfires and prescription natural fires (former terminology, now termed wildland fire use for resource benefit). From this table, an early, mid, and late season is defined with an embedded "core" season from which annual base funding is derived. Thus, the core season is defined as June 10 to August 18 (USDI NPS 2000).

Beginning generally in early May and depending on early spring precipitation, fire starts will build to a peak in late June. Activity generally remains moderate to high through July and into August, where monsoon establishment results in a sudden drop in fire size, although starts from lightning remain moderate. Early September marks a tapering off of activity.

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[7] Assumptions: 0 – 25% slope; midflame wind 8 mph; live fuel moisture 95% (FBPS model 2 only)

For the NCA, wildland fires generally occur between May and August. Fires occurring outside of this period are generally human-caused. The fire activity period starts May 1and continues to the second 10-day period in August. The strength-of-force period starts May 1 and ends July 29 (USDI BLM 1998).

7.0 SCOPE OF JOINT WILDLAND FIRE MANAGEMENT PROGRAM

Resource management objectives drive strategies toward the restoration and maintenance of naturally functioning ecosystems within the joint planning area. This section describes operational guidelines whereby the BLM and NPS can integrate a total program involving application of strategies that accomplish mutually identified resource management and protection objectives.

All strategies and FMUs identified below are in compliance with the Wildland and Prescribed Fire Policy ("The Policy") Implementation and Reference Guide (1998).

7.1 Wildland Fire Management Strategies

This subsection discusses the program of action allowed under the policy described above, which promotes concurrent use of available management strategies so that a range of objectives can be accomplished. Specifically, this program of action does not favor one strategy over another without analysis of specific area and resource information, objectives, values to be protected, safety, risk, complexity, and other considerations.

7.1.1 Wildland Fire

A "wildland fire" is defined as any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires. Both wildland fire suppression and wildland fire use will be discussed here.

7.1.1.1 Wildland fire suppression

Under the Policy, "wildland fire suppression" is defined as an appropriate management response (AMR) to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration but minimize loss of resource values, economic expenditures, and/or the use of firefighting resources.

Therefore, mnagement responses can vary by fire given the direction above. Specific and direct action can be taken along the perimeter to check spread locally,or suppression intensity can be maximized across the entire perimeter.

7.1.1.2 Wildland fire use

"Wildland fire use" is defined as the management of naturally ignited wildland fires to accomplish specific,prestated resource management objectives in the predefined geographic areas outlined in this Joint Plan. "Wildland fire use" is in contrast with "fire use," which is a broader term encompassing more than just wildland fires and is defined as the combination of wildland fire use and prescribed fire application to meet resource objectives. For the purposes of this Plan, the terms "Wildland Fire for Resource Benefits (WFRB)" and "wildland fire allowed to accomplish resource objectives" are similar. The WFRB applies to NPS lands, whereas the latter term applies to BLM-managed lands.

WFRB will result in a wide range of fire-line intensities and severities. This diversity of fire behaviors will result in vegetative mosaics, including different composition and age classes across the landscape. Wildlife habitat also will benefit from this variation.

One desired result from a joint wildland fire use program is to allow natural-ignition fires (i.e., lightning) to accomplish objectives across agency boundaries (i.e., across the Fire Use FMU) within approved prescription parameters and constraints. For the purposes of this Plan, all wildland fires on either agency's lands will be responded to and managed as if for one agency. However, the agency with the fire will take the lead in the AMR decision-making process (Sec. 9.0). Although the assessment process is similar for both agencies, there are separate documentation processes that must be understood by operational personnel.

7.1.2 Prescribed Fire

For purposes of the Joint Plan and as defined by the Policy, prescribed fire is any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist before ignition. As this Joint Plan integrates the strategy of prescribed fire across all FMUs, it is imperative that both agencies follow the approved resource and fire management objectives stated in this Plan closely. This collaboration is particularly important in situations where prescribed fire is planned and implemented across agency boundaries.

For the foreseeable future, the prescribed fire program under the Joint Plan will be aimed at restoring fire as a natural ecological process; however, for some areas, the immediate emphasis is reducing hazard fuels concentrations (see below). Many areas subject to first-entry treatment may require subsequent treatment(s) to achieve the hazard fuels reduction objectives,as opposed to attempting to meet all objectives on the first treatment and risk costly escape and/or unacceptable resource damage.

7.1.2.1 Hazard fuel reduction

Hazard fuels management activities reduce the fire hazard of natural fuels when weather and/or risk assessments demonstrate a reasonable chance for future wildland fire damage. The beneficial outcome is that firefighter and public safety is enhanced, real property and natural and cultural resources are protected, potential suppression costs are significantly reduced, and the restoration of fire back into fire-adapted landscapes is initiated through hazard fuels reduction activities.

Hazard fuel reduction objectives can be met through a well-planned series of projects in which prescribed fire can be used in combination with non-fire treatment strategies. Non-fire treatment may include, but not be limited to, pruning, thinning, lop/scatter, piling and burning, chipping/mulching, and fuel-wood removal by the public (BLM lands only). A primary objective of this technique is prescribed fire unit preparation, such as establishing control lines, clearing around values at risk, or treating selected areas that may threaten control lines or result in unwanted crownfire. A hazard fuels map should be prepared that will show the fuels concentrations to be treated.

7.1.2.2 Ecosystem management

It is important to recognize how important past treatment patterns will become over time, e.g., ignition and burn patterns should vary temporally and spatially across the landscape. With a disciplined joint-agency-designed monitoring program and repeated entries using a predetermined fuels treatment schedule, management can begin to adjust structure and successional dynamics to a natural range of variability. Each prescribed fire project shall be resource based, moving toward the desired future condition.

7.2 Fire Management Units

A "Fire Management Unit" (FMU) is any land management area definable by objectives, land features, access, values to be protected, political boundaries, fuel types, major fire regimes, or designated special management areas designated by agency policy or congressional action [i.e., wilderness, wilderness study area (WSA), etc]. Each FMU will have fire management strategies (with any constraints) assigned with which to accomplish stated objectives.

The three joint FMUs described below are defined primarily by a major fire management strategy corresponding to values to be protected and fire regimes. It is anticipated that at some point in the future, only two FMUs will be required to accomplish long-term fire- related resource management goals. However, FMU-3 (Fuels Management) delineates a conditional area in which fire and non-fire strategies may be used to reduce hazard fuels accumulations and thus begin to return the natural role of fire. It is conditional in that when hazard fuels management and other objectives are met, it will become part of FMU-2.

It should be stated and re-emphasized that prescribed fire is an acceptable management tool for all FMUs.

7.2.1 FMU-1: Minimize Wildland Fire Presence

This unit is one where all fires will be suppressed using a more agressive management response and where fire presence will be minimized. Features that define this unit are largely human developments, cultural resources, scenic values, and other structures that require protection from wildland fire of any ignition source. This unit identifies a complex array of checkerboard ownerships that, if written out, often becomes confusing to operational personnel. The following areas are within FMU-1 (illustrated in Appendix F).

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BLM

- Cerritos de Jaspe (approximately 9,200 acres)
- Areas of scenic value and development, including a boundary with Acoma Pueblo lands (Bureau of Indian Affairs) along Route 117 (including the "Spur") (approximately 4,500 acres)
- NCA lands on the northeast (the "Neck" unit) (approximately 6,100 acres)
- Areas of the Cebolla Wilderness (along State Route 117) where facilities, historic structures, or adjacent to small private land parcels (approximately 500 acres) (USDI BLM 1999)

NPS

- Cerro Bandera area (all private properties, NPS facilities including the Visitor Contact Station, the Fire Cache, and picnic and maintenance areas); southwest from Cerro Bandera along County Road 42 to the east slope of Cerro Rendija (approx. 6,000 acres)

The topography over most of the FMU is flat, with the exception of several steep cinder cones on the western portions. Elevations can vary from under 7,000 ft to over 8,300 ft, with the summit of Cerro Bandera the highest point on the Monument.

Fuels are among the most hazardous within the Joint Plan area, with FBPS Model 2 (timber/grass) as dominant. Other models represented are FBPS 1, 6, 8, and 9.

Access is difficult either by vehicle or foot travel, and initial attack times may vary widely depending on the degree of isolation of initiating fires.

FMU lands will be protected with an appropriate suppression response in and around identified structures, developments, and other values at risk to these approximate minimums.

- FBPS Models 1,2 (grass is primary carrier): ½ - 1 mile around value
- FBPS Models 8,9 (timber litter is carrier): ¼ - ½ mile around value
- FBPS Model 6 (shrubs): ½ mile around value

These inexact "buffers" around values to be protected are intended to be both flexible and based on the Indicdent Commander's (IC) judgement given conditions on the ground. Other factors assessed during initial attack also may modify the protection distances around values.

7.2.1.1 Management goals, strategies, and constraints

Goals for FMU 1

- Suppress all wildland fires using an aggressive suppression strategy that minimizes loss of structures, property, cultural resources, and other identified values at risk while ensuring firefighter and public safety.
- Reduce wildland fire hazard around developed areas, along interface boundary areas, and around identified cultural sites and features.

Strategies

- Both agencies shall establish fire protection agreements and partnerships that are developed, approved, and promoted to clarify responsibilities and to provide for pre-fire hazard and risk mitigation and suppression preparedness.
- Apply mechanical hazard reduction to create defensible space and reduce potential intensities.
- Use prescribed fire to consume accumulated debris from mechanical fuels reduction treatments where applicable.

Constraints for FMU 1

- All fire-management-related activities will be based on the safety of personnel and the public as the highest priority.
- Apply best available management measures (see theAir Quality Section) when mitigating for smoke impacts from prescribed fire.
- Bulldozers are allowed with a resource advisor on-site when life or property are at risk.
- Protection mitigation measures for all known cultural resources, ice caves, and human-constructed features (government or privately owned) must be in place before any fuels reduction project or suppression action.
- Consider assignment of a cultural resource specialist to project(s) where on-site mitigation may be required.
- Low-level aircraft use, including retardants, will be employed only for protection of life and property.
- All fire suppression personnel operating within Unit will be briefed regarding known hazards, LCES (Lookouts, Communications, Escape routes, Safety zones), current and predicted weather, and current fire behavior by the IC or designee.
- Minimum Impact Suppression Tactics (MIST) will be employed within 4 miles of SR 117 to ensure protection of cultural sites and features. A map of "special areas of concern" will be on file in the respective agency resource offices.

Management intent regarding all wildland fires is clear. All wildland fires, regardless of ignition source, will receive prompt suppression action commensurate with human safety in all instances.

7.2.2 FMU-2: Wildland Fire Use for Resource Benefits

Management of naturally occurring fire within this Unit shall be such **that fire presence is maximized** across the landscape, and fire is restored to the ecosystem to the extent possible. The Unit was designated from an interagency, interdisciplinary analysis that focused on current situational factors such as minimal values at risk, optimum fuel loads on the average across a majority of the area, and vegetation that was shaped historically by periodic natural fire disturbance events. The following landecapes comprise the Unit and are shown on the Joint FMU Map (Appendix F).

NCA

- West Malpais Wilderness (approx. 39,800 acres)

Monument

- The Hoya Flow area, surrounded on west, south, and east by West Malpais Wilderness (approximately 17,000 acres)
- McCarty's Flow (southern 2/3 of Flow area, approximately 49,000 acres)
- Lost Woman Crater (forms a U-shaped land area from Zuni-Acoma Trailhead on highway 53, southwest to the Bandera Flow north of Cerro Encierro, and northwest to the area around Lost Woman Crater)
- West Malpais (a 2,500-acre tract trending north-south forming a narrow strip; located in the southwestern quarter of McCarty's Flow western edge)

7.2.2.1 Management goals, strategies, and constraints

Goals for FMU-2

- Allow lightning ignitions, to the extent possible, to restore fire as a natural disturbance event that results in resource benefits of producing a wide range of intensities and severities, resulting in mosaics of plant species composition and structure across the landscape (USDI BLM 1988).
- In identified areas where fuels accumulations exceed the historical range of variability, reduce crownfire/high-severity wildland fire potential.

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Joint Agency Strategies[8]

- Employ, under agency guidelines, an AMR strategy in FMU 2 that considers the management of naturally ignited wildland fire for resource benefit in areas of the Unit where current fire environment conditions warrant.
- Use approved fuels management techniques that include prescribed fire treatments to reduce localized fuels concentrations back to a more natural range of variability only where necessary to meet fuels reduction objectives.
- Ultimately manage the FMU to allow for maximized wildland fire presence to the fullest extent possible while protecting values at risk (ie, wilderness).
- An appropriate suppression response will be used in FMU-2 for all wildland fires that do not meet resource objectives or prescriptive criteria.

Constraints for FMU-2 include the following.

Wilderness
Until programmatic minimum requirement guidelines can be approved for wilderness areas and WSAs within the NCA, the BLM *Interim Policy and Guidelines for Lands under Wilderness Review* will be followed for all project work in these designated areas.

- For El Malpais National Monument lands managed as "*de facto*" wilderness in FMU-2, the constraints and protocols are similar to those listed for the BLM below.
- For a wildland fire within the wilderness (FMU-2) that is under assessment for an AMR strategy, the following protocols[9] will be followed.
  1. The agency administrator will ensure the involvement of a [wilderness] resource advisor (RA) under a Delegation of Authority early on as to potential for use of motorized resources;
  2. If determined by the Fire Use Manager (FUMA) or IC, in consultation with the agency resource specialist/advisor, that motorized resources are needed for a suppression response (i.e., a "fire emergency" where human life, property, or high-value resources may be at risk on adjacent lands or where there may be unacceptable changes to wilderness resource values), a proposed route and resources to be used will be developed for agency administrator approval.
  3. For any authorized motorized use in FMU-2, the FUMA/IC is responsible for notifying all responding units and briefing resources assigned on minimum impact suppression techniques.

In addition, the following apply.

- For large wildland fires requiring an incident management team with multiple resources, RAs will be assigned to theIC to ensure that wilderness protection objectives are met.
- Under extreme fire danger conditions (generally PL-4 and 5), advance approval may be granted by the Fire Program Manager (FPM) (following consultation with the Agency Administrator and authorization) to allow motorized access for suppression purposes. Limitations will be set on type, number, and extent of use. Unlimited motorized access will not be permitted.
- Under no conditions should motorized access be permitted following a successful initial attack or needed monitoring, etc. If such a contained fire should flare up later, wilderness access shall be considered in the Wildland Fire Situation Analysis (WFSA) for which a new response strategy is developed with RA input.
- The RA will determine if any post-fire monitoring or rehabilitation is required.

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[8] For BLM, operational procedures for managing Wildland Fire Use for Resource Benefit (WFRB) strategy is under agency review and will be included in this Plan, Appendix L.

[9] Protocols based on BLM policy recommendations developed in 1998; see also Appendix E for Minimum Tool Flowchart for FMU-2.

Prescribed fire burn plans will be forwarded to the designated BLM wilderness coordinator or NPS Chief of Resource Management for review. The review process needs to be documented and appended to the project plan before work begins.

Other Constraints and Guidelines*

- The appropriate level of management will be assigned to the fire by the FPM for both agencies party to this Plan using agency complexity rating guidelines for extended attack incidents.
- All fire management activities will use MIST at all levels of the organization, during crew briefings, and during preseason orientation.
- Smoke management reporting requirements for the State of New Mexico (see the Air Quality/Smoke Management Section) will be followed for prescribed fire projects, and appropriate notifications will be made during suppression operations.

*All constraints listed for FMU-1 also apply to FMU-2.

7.2.3 FMU-3: Conditional Wildland Fire Use

This FMU is established under joint agency management as a Conditional Wildland Fire Use Unit. This unit is to remain a separate fire management unit that is conditional on fuels being modified (reduced) to a more natural range of variability through approved treatment strategies. In the interim period, management strategies can range from

- suppress unwanted wildland fires to
- manage wildland fires for resource benefit to
- use prescribed fire as a tool to achieve fuels management objectives to
- use non-fire treatments to achieve fuels management objectives

See the detailed discussion of strategies below.

Through fire history, literature review, on-site fuels inventory, and other fuels-related studies, it has been determined that lands under this FMU contain areas of fuels concentrations that could, under high fire danger conditions or above, potentially threaten resource and other values through unwanted crownfires. The unit contains localized but significant areas of unnaturally high stand densities, down and dead surface fuels, and ladder fuels that contribute to the overall fuels complex (see below). Consequently, this FMU is considered a high-priority fuels management area. Emphasis is placed on the application of a **combination of management strategies** (listed above) to accomplish stated fuels management and resource protection objectives.

After the regime of approved fuels treatments (i.e., first-entry treatments as a minimum) identified in a multi-year schedule is complete and where objectives have been met, areas within FMU-3 will be assessed for inclusion into FMU-2. This assessment transition will be documented in future Joint Fire Management Plan revisions.

Lands in this FMU are shown in Appendix F and described below.

BLM

- All lands not classified under FMU-1 or FMU-2.

The area's rugged topography supports a complex pattern of open areas, ponderosa forests, pinyon-juniper woodlands, and grasslands. However, many vegetative communities are becoming stagnant or deteriorated (USDI BLM 1999). Open grasslands have changed to shrublands or grass-shrub communities and pinyon-juniper woodlands because of the absence of periodic fire and human use. Increased fuel loads and loss of biodiversity is occurring, setting up conditions for high-intensity stand-replacing crownfires in areas of the unit.

NPS

- El Caulderon Lava Fields (along State Route 53, north and west, then south to a point just north of Cerro Encierro) (approximately 4,000 acres)
- Highway 117 south of La Ventana Natural Arch south approximately 2 miles to southeast corner of Monument also far northeast, and north (approximately 2,700 acres)
- All other NPS lands (El MalpaisNational Monument) not included in FMUs 1 or 2.

This FMU encompasses less than 1/3 of the Monument lands. The topography varies from flat, rugged, and forested lava flows, to several cinder cones, to canyons and arroyos, to wide grassy valleys and high mesas.

The 18,300 acre BLM Chain of Craters WSA is included because of its proximity to the Ramah Navajo Indian lands and the current difficulty of defending these lands from wildland fire until fuels can be treated adequately and defensible boundaries can be established.

The Lost Woman Crater Crater area contains high concentrations of lava tubes, ice caves, volcanic vents, and associated features requiring active fuels management to mitigate undesirable fire effects on these features. There remains a 3,000-acre tract in the northern portion of this area, and high concentrations of slash are scattered across the area. The area is capable of supporting large fires exhibiting high resistance to control as the four largest wildfires on the Monument occurred in this area during the late 1980s. Access remains difficult, and fuels mitigation efforts will be costly.

Goal for FMU-3

- In identified areas where fuels accumulations exceed the historical range of variability, reduce crownfire/high-severity wildland fire potential and create adequate defensible space where applicable.

Strategies

- Employ a joint AMR strategy in FMU-3 that considers the full range of suppression options available, commensurate with maximizing public and firefighter safety and protection of resource values and optimizing suppression costs.
- Use the full range of fuels management methodology, including prescribed fire and non-fire treatments, to reduce fuels concentrations to a more natural range of variability.
- Ultimately manage the area (as FMU-2) to allow for wildland fire to play a natural disturbance role to the fullest extent possible while protecting values at risk.

The goal and strategies listed above are similar for those listed for FMU-2 with the exception that the AMR suppression strategies in FMU-3 may consider a fuller range of treatment options, given safety factors and conditions in the fire environment.

Fuels management is a key strategy within FMU-3. Each agency will prepare project plans, or in the case of joint fuels management projects, a joint plan, according to guidelines and directives set forth for preparing such plans. Of particular concern are the level and scope of mechanical fuel reduction to accomplish on-site project objectives. Plans must receive appropriate review and contain mitigating measures that protect natural, cultural, and social-political values and concerns.

The application of herbicides for the management of non-native vegetation on BLM lands must be planned and implemented according to established policy and application protocols. Close coordination with cooperators where applicable is also necessary.

Constraints

See "Constraints for FMU-2."

7.3 Fire Environment: Regimes, Fire Behavior, Fire Effects

The joint planning area consists of a vast area of forested lava flows with interconnected historical fire regimes. The vegetative type that supports the shortest return interval with a historically low-intensity fire behavior regime is the ponderosa pine type. With an understory of generally herbaceous ground cover, the ponderosa pine type supports surface fires ranging from creeping to active running surface fires with winds. Considerable torching and short-range spotting can occur from fires encountering heavy down and dead fuels concentrations. During hot and dry periods, this torching and spotting fire behavior can become more common. However, following the onset of monsoons, herbaceous cover plants (warm season grasses) rapidly green up and provide a degree of resistance to fire spread. Crownfire behavior is relatively uncommon except under the most extreme conditions of wind events, critical surface intensities, and adequate crown closure (USDI, NPS 1992).

For the other major cover types, particularly where pinyon-juniper component is predominant, fire behavior during season may vary from low-intensity underburning and creeping to extreme behavior with frequent torching and intermittent to sustained running crownfire under high-wind conditions.

Fire effects from the low- to moderate-intensity wildland fire are generally positive. Nitrogen recycling resulting from volatilization of nitrogen-inhibiting terpenes contained in needle litter can occur with burns under ponderosa canopy at moderate or low intensities. Other critical chemicals (phosphorus, ammonium, potassium, etc.) become available for cycling back into nutrient-poor soils under low-intensity burns. Biomass is reduced, surface vegetative matter, and per cent of canopy cover all can be reduced to allow sunlight on soil surfaces. Following fire, vegetation that requires increased sunlight flourishes. Fire behavior that reflects increased but intermittent high intensities is necessary in localized areas to reduce pinyon-juniper encroachment, for example.

The reintroduction of fire into the present-day forest has the potential to change the frequency and distribution of key wildlife habitat components such as snags (for cavity nesting birds), downed logs (for small mammals), and old trees (roost sites) (Randall-Parker and Miller 1999).

For those fire-evolved ecosystems that historically supported high-frequency, low-intensity fire regimes, periodic fire between 7–15 years (average) is required to maintain sustainability, species diversity, adequate nutrient-cycling pathways, and eventual resistance to sustained and destructive crownfire.

The issue of alien (non-native) species poses a significant threat to wilderness and other protected lands by directly and indirectly impacting native species. Of more concern is the effect of alien plants, which can compromise the genetic integrity of native species. These patterns across the landscape have been brought about by early fire suppression and livestock management practices. Generally, the exotic (alien) plants found in the planning area are opportunistic; that is, these plants can easily occupy a localized site that has been disturbed. These areas, which were occupied by native cover species and maintained by periodic surface fire, are now supporting exotic plants that have slowly displaced many native species. In some cases, the invading exotic plants cannot carry fire adequately; in other areas, fire can be used to encourage native plant re-establishment. This subject needs further management-oriented research.

Restoring fire (whether through prescribed fire treatments or fire use for resource benefits) in once high-frequency, low-intensity forest ecosystems (FMUs 1 and 2) that now contain large fuels accumulations requires careful planning and implementation to minimize risk to property, the public, and resource values.[10]

8.0 FIRE MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

8.1 Bureau of Land Management Organizational Structure, Roles, and Responsibilities

The Albuquerque Field Office and El Malpais National Monument are included in the Albuquerque (ABZ). The ABZ is responsible for providing initial attack dispatching and where the BLM cooperates with the Forest Service and the Bureau of Indian Affairs in providing dispatchers to ABZ.

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[10] From Cole and Landres (1996), *Threats to Wilderness Ecosystems: Impacts and Research Needs.*

The BLM fire organization that services the NCA under this Joint Plan includse the Field Office Fire Program Manager (FPM) located in the Albuquerque Office. This position reports to the Renewable Resources Assistant Field Manager. The following positions report to the FPM.

- Dispatcher (PFT)–ABZ
- Fuels Management Specialist–Albuquerque Field Office
- Engine Foreman (career seasonal, 9 months)–Grants
- Engine Foreman (career seasonal, 9 months)–Albuquerque Field Office
- (2) Assistant Engine Foreman (career seasonal, less than 6 months)
- (4) Firefighter (seasonal)

In addition to the fire staff listed above, the Albuquerque Field Office has approximately 15 red-carded, non-fire staff. Approximately half of the 15 are fireline-certified year to year and can actively participate in wildland fire or prescribed fire operations. Two individuals are members of the New Mexico Type II Interagency Incident Management Team.

The FPM retains overall responsibility for all fire management program activities for BLM under this Joint Plan.

During a fire season, one engine normally will be assigned to Grants (with a fire cache that supports a Type 6 engine) and one engine will be assigned to the Field Office in Albuquerque.

8.2 National Park Service Organizational Structure, Roles, and Responsibilities

The El Malpais National Monument fire organization is structured such that an area FPM duty-stationed at Bandelier National Monument (Los Alamos, New Mexico) is responsible for fire program oversight and management consultation (20% FTE committed to El Malpais National Monument). Although the position reports to the Superintendent of Bandelier National Monument, there is the added requirement (under an interpark agreement) that the FPM will coordinate with the Chief of Resource Management of El Malpais National Monument with final signature authority provided by the Superintendent of El Malpais National Monument for El Malpais fire management matters.

The Fire Management Program Assistant (duty-stationed Bandelier National Monument) also provides technical assistance under the agreement mentioned above.

Two positions report to the Forestry Technician (Fire Operations Specialist) at El Malpais National Monument.

- Engine Foreman (seasonal)
- (2) Firefighter (seasonal)

Refer to the Organizational chart for the BLM and the NPS in Appendix C.

8.3 Joint Interagency Coordination to Implement the Plan

The roles and responsibilities common to both agencies under this Plan are identified in Sec. 9.3.

The key contacts are as follows.

- FPM–Albuquerque Field Office
- FPM–Bandelier National Monument
- Chief, Resources Management, El Malpais National Monument
- Fire Operations Specialist–El Malpais National Monument

The BLM requires an additional repeater to be installed in the El Malpais area or that the current system be reconfigured to provide more effective radio communication coverage over the area.

8.4 Agreements

Joint Powers Agreement

This blanket agreement between the State of New Mexico and cooperating federal fire agencies (Bureau of Indian Affairs, Bureau of Land Management, US Fish and Wildlife Service, National Park Service, and the US Forest Service) provides for mutual wildland fire suppression assistance.

Joint Powers Operating Plan–Albuquerque Unit (Appendix E)

Under the Joint Powers Agreement between all wildland agencies, the Operating Plan provides specific direction for implementing the Joint Powers Agreement. This document identifies areas of initial attack responsibility as well as reporting requirements, notification procedures, and reimbursement guidelines for any wildland fires that escape initial attack on State and private lands. Also under the Operating plan is language providing for the specifics of Joint protection responsibility shared between BLM and NPS for Monument and NCA lands.

Albuquerque Unit Management Board Memorandum of Understanding (MOU)

This MOU establishes a board consisting of representatives of all agencies within the Albuquerque Unit. The Board's mission is to actively manage operations of the Albuquerque Unit Coordination Center (ABZ), which includes the safe, timely, and cost-effective coordination of interagency suppression resources requested by participating agencies and the Southwest Coordination Center (SWCC).

Interim Initial Attack Dispatch Memorandum of Understanding (MOU) between Cibola National Forest and Albuquerque Field Office

This MOU establishes responsibility for the Albuquerque Zone (ABZ) to provide initial attack dispatch and resource tracking services to the Albuquerque Field Office. Its location is the Fire Office at the Albuquerque field Office.

9.0 WILDLAND FIRE MANAGEMENT

This section addresses the two primary components of wildland fire management, suppression and fire use, with program elements outlined under each component.

9.1 Wildland Fire Suppression

Wildland fire suppression is defined as "…an appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire." (USDA, USDI 1998). The following subsections discuss all aspects of a joint agency suppression program, ranging from preparedness actions through rehabilitation after wildland fires.

9.2 Range of Potential Fire Behavior

All of the wildland fuels complexes represented on Monument and NCA lands display a range of fire behaviors, which are described below.

- Creeping ground fires in heavy needle/leaf litter and underlying duff under higher surface fuel, duff, and soil moistures (normally during the off-season periods, late winter-early spring and late fall-winter)
- Surface fire spread with an active flame front with lower fuel moistures (early fire season, following several drying days, and early fall with little or no wind)
- Active surface fire spread with torching, short-range spotting (usually with higher frontal winds, lower humidities in mid-April, May, June, early July)
- Running surface fire with torching, intermittent or sustained crownfire, short- and long-range spotting (under high winds, low humidities, low foliar and surface fuel moistures, and following drought periods where indices are over the 90th percentile)

Wildland fires that occur under the conditions described in the latter two ranges may receive an aggressive supppression response, depending on location and fuels ahead of potential spread. Conversely, wildland fires expressing behavior characteristics described under the first two categories are good candidates to be assessed for management as a WFRB (NPS) or to be allowed to burn to meet resource objectives (BLM).

9.3 Preparedness Actions

"Preparedness" refers to activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination. This section establishes a Joint Plan base program necessary to meet wildland fire suppression, fire use, and prescribed fire workloads. The fire organizations are described.

A Joint Fire Management Plan Implementation Group will be formed at Plan approval. The purpose of the Group is to ensure operational consistency and close coordination of each agency as directed in the Plan. The Group shall consist of the FPM Bandelier–El Malpais National Monuments, theFPM Albuquerque Field Office, the Fire Operations Specialist (ELMA), and the Chief of Resources Management (ELMA). The agency administrators or designees are considered *ad hoc* members who should be invited to regularly scheduled meetings. Meetings will be conducted a minimum of twice per year (pre-season and post-season) to establish joint projects and procedures for wildland and prescribed fire, readiness, funding issues, problem areas, and other items in preparation for the season. The Group also will evaluate how implementation of the Joint Fire Management Plan is progressing.

The Group will use the following as a "tickler list" to develop action items for each planning level (see the Joint Step-up/Staffing Plan in Appendix H).

- Prepare a mutual severity needs analysis for the coming fire season when conditions exceed those of a normal fire year (consider pre-positioning of suppression resources; augmentation and support outside local organization needed).
- Review new policies, roles, and responsibilities.
- Review and update as necessary all delegations of authority and an Agency Administrator Briefing Package.
- Identify any mutual safety issues and mitigating actions required.
- Clarify mutual criteria for team transitions and managing mutual multiple fire activity.
- Develop mutual and integrated action items to implement staffing levels (refer to the Step-up Plan in Appendix H).
- Identify strategies to communicate fire program principles to the cooperators and publics (Red Flag alerts, etc.).
- Agree on mutual standards to evaluate the performance of the organizations in implementing the Joint Plan.
- Address other issues requiring coordination.

Any proposed addenda, omissions, or clarifications in policy or procedures that require agency administrator approval will be developed by the Group. After appropriate review and approval are obtained, the new addition(s) will be appended to the Joint Plan.

9.4 Prevention

The prevention objectives for the planning area, which that will constitute the foundation for a Joint Prevention Plan, are the following.

- Reduce the number of human-caused wildland fires.
- Integrate fire prevention messages into a variety of programs, ranger activities, and local media, to be targeted for the using public, schools, recreationists, landowners, and motorists.
- Coordinate fire prevention efforts with all cooperators and affected landowners.
- Implement the hazard reduction fuels management program.
- Prepare and deploy prevention-related signs and messages.

The Joint Prevention Plan will incorporate the Prevention Plan for El Malpais National Monument and BLM fire prevention guidelines and policies and will be included as Appendix K.

9.4.1 Training and Readiness Actions

The purpose of wildland and prescribed fire training is to promote safe and effective individual performance in accomplishing fire management goals and objectives.

All wildland fire personnel for the BLM and NPS will be qualified and certified for the position(s) assigned to them according to the *Wildland and Prescribed Fire Qualifications System Guide* (PMS 310-1). For the BLM, the *BLM Standards for Fire & Aviation* (release date 04/00), Chapter 2, "Requirements for Fire Management Positions" detail additional requirements for fire positions. For the NPS, the *Wildland Fire Management Reference Manual RM-18* (4/99), and *Director's Order #18: Wildland Fire Management* (5/99) outline agency-specific guidelines.

The qualification records of all employees involved in wildland fires certified at or above Single Resource Boss/Unit Leader will be entered into and maintained annually on the DOI Incident Qualification System.

The agencies will cooperate with the Unit Training Board as needed in developing an annual training schedule. The training needs assessment updates are the responsibility of the Joint FMP Implementation Group. Refresher courses (firefighter safety, helicopter operations, etc.) and other required annual training will be coordinated by qualified staff as assigned by the Implementation Group.

Readiness actions (in addition to those listed in Sec. 9.3 above) are described below.

- The Oso Ridge Lookout cost-share agreement will be updated and in place (El Malpais National Monument)
- The agency fire caches and equipment shall be inspected and documented for completeness and serviceability as directed by the respective FPMs or designees on a pre-season and during-season non-scheduled basis.
- Timely follow-up actions to preparedness inspections will be ensured.
- El Malpais National Monument will maintain supplies, materials, and equipment at the fire cache on Hwy. 53 to meet normal fire-year requirements and a 20-person hand crew.
- The BLM will maintain a fire cache at Grants to support a Type-6 engine.

The following preparedness activity schedule will be followed annually.

- February 15–March 15: All fire qualified permanent personnel will take the Pack Test; seasonal personnel will be tested upon entering on duty
- February 15: Fire Training and Experience Records will be entered for permanent employees
- Year-round: NFDRS Weather Station (#293301) on line; data entered into SACS
- March 31: Contractual documents for support services completed; funding provisions under existing agreements in place
- March 1–15: Red Cards signed by FPMs and distributed to employees
- April 1–15: All engines and support equipment serviced and fire-ready; Pre-Attack Plan reviewed and updated; daily situation reporting underway (agency-specific standard operating procedure)
- May 1–15: Training for all seasonal employees completed, including mandatory Refresher
- May 1–End of season: Roster of all fire qualified personnel maintained, with PPE initial attack gear/Red pack ready for 2-hour callout
- October 31: Equipment winterized, cache inventoried, NFDRS Weather Station offline, post-season reviews and reports completed
- Annually: Local readiness review
- Every 3 years: Formal readiness review (NPS-18)

9.4.2 Joint Step-Up Plan

The Step-Up Plan (NPS) or Fire Danger Operating Plan (BLM) describes a series of escalating management responses that are intended to supplement normal wildland fire capabilities for short periods (i.e., normally one burn period). This policy-compliant plan is in table format and is in Appendix H.

9.4.3 Pre-Attack Plan (Refer To Appendix H)

The pre-attack plan includes a compilation of essential fire management information that fire staff can use for quick reference as incidents occur. The plan contents includes the following information.

- Sensitive resource information references
- Evaluations of structures, improvements, and other values at risk
- Criteria for closures
- Evacuation plan

For the NPS, a Pre-Attack Planning Checklist is included in the Wildland Fire Management Reference Manual (RM-18). As items on this checklist are completed or updated, they will be appended to this Plan. The Preseason Risk Analysis (BLM "Seasonal Risk Analysis") is a procedure for assessing present and future fire danger for the planning area using the criteria in Table 3.

Table 3. Preseason Risk Analysis Criteria, Current Level, and Historic Average.

FACTOR	CURRENT LEVEL	HISTORIC AVERAGE
• TEMPERATURE LEVELS • PRECIPITATION LEVELS • HUMIDITY LEVELS • PALMER DROUGHT INDEX • KEECH-BYRAM DROUGHT INDEX • ENERGY RELEASE COMPONENT OR BURNING INDEX • 1000-HR TLFM • FUEL MOISTURE LEVELS FOR: LIVE AND CURING (HERBACEOUS) • FIRE ACTIVITY TO DATE • UNUSUAL WIND/WEATHER EVENTS		

Applicable factors from this table should be analyzed jointly by the respective agency FPMs as early as conditions warrant before fire season. Severity funding requests, if indicated from the risk analysis, also should be jointly prepared and finalized in coordination with cooperators statewide through Unit Boards. Submissions will move through agency fire channels to the NIFC. Refer to BLM *Standards for Fire & Aviation Operations*, Chapter 7, and/or NPS RM-18, Part 18.

9.5 Minimum Impact Suppression Tactics

Responsible land stewardship ethics apply especially to the area of fire management. MIST guidelines were developed to ensure that the impacts of fire management actions do not exceed those of the fires. These guidelines will be communicated via instructions that are clear, measurable, and understandable and will be transmitted both verbally and in writing. They will relate to Sec. 16, Protection of Sensitive Resources. The guidelines will apply from the Agency Administrator down through Incident Management Teams to firefighters on scene.

All suppression tactics and support actions will be selected commensurate with potential fire behavior and to minimize impacts to values to be protected. These decisions must be informed and based on interdisciplinary inputs to the extent possible with respect to conditions on the ground. The MIST guidelines included in the Joint Plan are in Appendix E.

9.6 Rehabilitation

The impacts of suppression and other management actions often require some form and level of rehabilitation. Short- and long-term impact mitigation measures are outlined in Reference Manual RM-18 (NPS), the DOI Burned Area Emergency Rehabilitation (BAER) Handbook, and Director's Order #18 (NPS).

The joint guidelines to be followed include the following.

- Minimum requirements shall guide actions to mitigate actual or potential damage from wildland fire.
- Mitigation of suppression damage will be specified in incident action plans.
- BAER plans will be prepared as necessary to specify long-term mitigating actions, submitted to the affected agency central office (NPS: Denver Support Office, Intermountain Region; BLM: State Office) within 5 calendar days following control of a wildland fire.
- NPS: Burn areas generally will not be seeded or revegetated, depending on specific local impacts.
- BLM: Burn area seeding will be considered, depending on specific local impacts.
- Water bars shall be hand-placed; no mechanical equipment will be used.

9.7 Records and Reports

Table 4. Records and Reports

FORM/REPORT	RESPONSIBLE PARTY	DISTRIBUTION	FREQUENCY
DI-1202 Fire Report (For fire use, include narrative, WFIP, daily wx fcsts, growth maps, costs and monitoring data; attach WFSA as appropriate)	NPS Superintendent, BLM Field Office Mgr. (Note: a separate NPS signature protocol exists for WFIP; see Sec. 9.8)	Copy (1202 only) to Archives (SACS) within 10 work-days; Fire Use package to Files	Per Incident/FURB
Interagency Fire Qualification Form and Card (Red Card)	Designated Fire Program Assistant/ Dispatcher (NPS/BLM) Signed by FPM's	Affected Personnel	Annually
Situation Report (daily May 15 – September 30)	Forestry Tech (NPS) FPM or Dispatcher (BLM)* *May be combined	ABZ/Bulletin Boards, etc.	Daily during season
Fire Weather/Indices (daily; see dates above)	Dispatcher (BLM)	Staffing levels (BI) received by Dispatch (BLM) from WFMCS	Daily
Daily Cost Accounting (wildland fire use)	IC/Fire Use Mgr./Burnboss	As agreed	Schedule to be determined
WFSA	Agency Administrator	Agency-specific	Per Incident

9.8 Wildland Fire Use and Suppression—Joint Plan

All fires not ignited by managers for specific purposes are considered wildland fires. Thus, all wildland fires will have the same classification but separate from prescribed fire covered in Sec. 10.

9.8.1 NPS Strategies—Wildland Fire Use

Under this Plan, WFRB is applicable for NPS portions of FMU-2 for fires of natural origin. Wildland fires initiated from natural causes occurring in FMU-3 will receive a suppression response under conditions described in this section. However, a range of intensity of suppression actions within the Unit is available to management. FMU-1 is a total suppression response for protection of life and property.

All wildland fires of natural ignition may be managed to accomplish resource objectives per approved FMP. All human-caused wildland fires will receive a suppression response commensurate with firefighter/public safety, values to be protected, and costs.

All strategies developed within this section follow directives in the *Wildland and Prescribed Fire Policy, Implementation Procedures Reference Guide* and NPS RM-18.

9.8.2 BLM Strategies—Wildland Fire Use

Per BLM Draft Handbook 9211-1 and the *Standards for Fire & Aviation Operations*, wildland fires will receive an AMR based on initial and periodic evaluations of public and firefighter safety, current and predicted fire behavior, values at risk, potential damage from suppression activities, and resource availability. A WFSA will document this process until specific agency guidelines are developed and approved.

Appropriate Management Response (AMR) can vary by individual wildland fire, and may range from intense suppression action to monitoring, or combinations and degrees of intensity as required.

The decision process to evaluate each new fire start and assess ongoing wildland fires in the joint planning area should consider the following elements.

- Determine fire origin, location, and cause.
- Determine affected FMU.
- Obtain current and predicted weather.
- Determine immediate threats to life and property.
- Consider smoke and health concerns.
- Determine if necessary qualified personnel and fire management resources are available.
- Determine whether a qualified manager for the fire available.
- What are immediate and potential impacts to recreationists, visitors, users, and local communities.
- Determine the projected fire growth under normal and drought conditions.

Refer also to the BLM Extended Attack Complexity Analysis in the Operations Guide that assists the FPM and IC in considering the order for a Type II Incident Management Team (IMT).

9.8.3 Implementation Responsibilities

Ultimate responsibility for all wildland fire management activity rests with the respective agency administrators. For operational issues, the "Duty" FPM for the agency hosting a wildland fire is responsible for implementation actions.

National Park Service

- The Regional FPM is responsible for reviewing Implementation Plans [Wildland Fire Implementation Plans (WFIPs)] for wildland fires with a "complex" rating or those Plans with a projected cost of greater than $500,000.
- The National FPM (NIFC) is responsible for review of WFIPs with projected costs of greater than $1 million.

- The Monument Superintendent is responsible for reviewing all Plans below a "complex" rating or projected costs less than amounts listed above.

Bureau of Land Management

The agency administrator, or representative, and the FPM or Incident Commander will prepare the WFSA.

9.8.4 Qualifications

Qualifications for all wildland fire management positions shall conform to guidelines set forth in the *Wildland and Prescribed Fire Qualification System Guide* (PMS 310-1).

For joint wildland fire operations, a duty Fire Program Manager (or designee) will be available during the normal fire season. Albuquerque Unit Dispatch will be kept apprised of who the individual is, the tour of duty, and notification procedures.

Incident Commander
All wildland fire responses should be managed on site by a qualified IC, ranging from ICT5 (initial action) through ICT1, according to complexity. ICs will report directly to either the duty FPM or the Agency Administrator via a Delegation of Authority.

Prescribed Fire Behavior Analyst
Consultation with a qualified Prescribed Fire Behavior Analyst (RXFA) is recommended (not required) to assist with preparation of a WFIP (NPS) and (BLM), provide input to fire potential, assessing the NPS Maximum Manageable Area (MMA) or the BLM allowable area and other duties as assigned.

Long-Term Analyst
The Long-Term Analyst (LTAN) assists with and/or prepares long-term predictions from models such as FARSITE and RE-RA and provides timely inputs to development of threshold conditions, season-changing events, etc., to the RXFA.

Fire Information Officer
A qualified Fire Information Officer (IOFR) may be required on the Fire Use Team to provide up-to-date information to media and the interested public through radio and television announcements, press releases, and website updates (if online).

Other qualified positions may be required to manage wildland fires, and will be determined as conditions warrant. An interdisciplinary team (IDT) should be formed for interagency managed fires or fires of higher complexity.

9.8.5 Decision-Making and Monitoring

Figure 3 shows the generalized decision process for both agencies based on the *Policy Implementation Procedures Reference Guide* and BLM *Standards for Fire & Aviation Operations*:

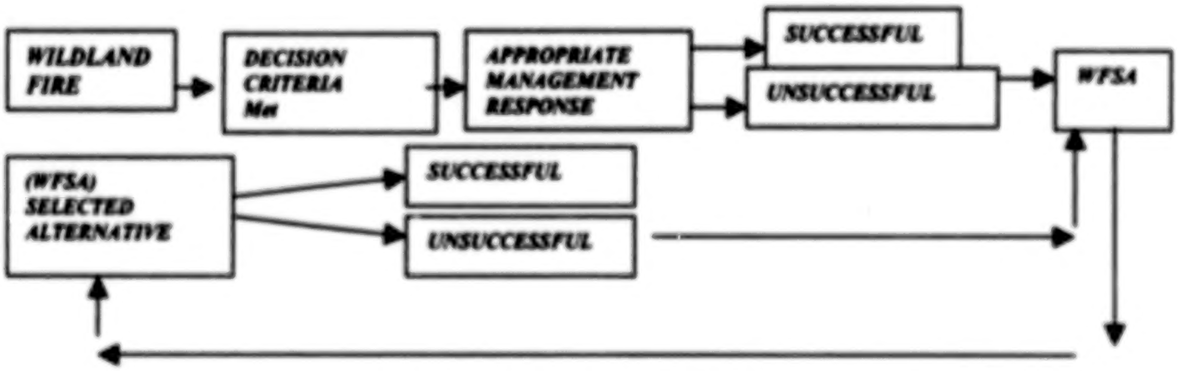

Fig. 3. Decision Process for Wildland Fires.

Information in the following paragraphs describe the actions necessary to safely manage wildland fires while considering resource and other values to be protected.

All references to the WFIP only apply to wildland fires on NPS land (Ref: NPS RM-18, Chapter 9, and Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide, Chapter 4.)

The BLM will use the Extended Attack Complexity Analysis and WFSA as decision documents in this process (Ref: BLM Standards for Fire & Aviation, Chapter 10).

Documentation that supports the fire use decision process is in Appendix J ("Wildland Fire Implementation") and are referenced (in bold) in the following text.

9.8.6 The Decision Process

This stage involves collection of necessary information with which to select an AMR strategy. The process shall include at least the following.

1. **Initial Assessment**
   The data on the **Fire Situation Form** (or **Size-Up Checklist,** BLM *Fire & Aviation Operations Guide, Chapter 9*) are collected routinely by the Initial Attack Incident Commander (IAIC) on-site as soon as possible following ignition.

2. **Decision Process and Strategy Selection**
   The go/no-go decision process[11] and Go-No-Go Decision Matrix (chart)are in Appendix J.

   Strategy selection (i.e., suppression or fire use response) for all wildland fires in FMU-2 and FMU-3 is based on responses from a **Decision Criteria Checklist** (Appendix J).

   Responsibility: Duty FPM
   There are six basic criteria to consider or perform in the process.

   1. Assessments of degree of risk of identified threats to life, property, and resources. If threats cannot be mitigated adequately, managing the fire for resource benefits may have undesirable outcomes.
   2. Relate potential outcomes with current and predicted fire behavior, given objectives for safety, costs, and effects on resources.
   3. The risk assessment process may require a RERAP assessment or a qualitative assessment (Chart, **Wildland Fire Relative Risk Rating,** see *Implementation Procedures Reference Guide*, Fig. 4) to provide the Agency Administrator(s) with a "relative risk" of the fire.
   4. The complexity assessment portion of the chart can originate with the **Complexity Rating Worksheet** (Appendix J). Also, fire danger indices (ERC for the historical period maximum, average, and 97th percentile) read from a locally developed chart (or card).
   5. Other fire activity. Are the Joint agency resources capable of safely managing current fire activity with appropriate skills positions and local resources? Consider the availability of Zone resources, the Fire Use Management Team, and the NPS Fire Use Module(s), etc.
   6. Allow for Agency Administrator discretion based on issues external to the fire management program.

   Consider assigning a RXFA and/or LTAN to assist with assessing growth potential, assessing risk, and validating the MMA (NPS) or Acceptable Area (BLM) as required. The IC will make this determination.

   When the **Decision Criteria Checklist** is complete, the FPM can determine whether to initiate actions to manage the fire for resource benefits ("go") or to initiate a suppression response ("no-go").

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[11] Elements of this process are taken directly from the *Implementation Procedures Reference Guide, Wildland and Prescribed Fire Management Policy.*

The Implementation Procedures Reference Guide specifies a 2-hour time constraint for the initial decision process as a recommendation; therefore, expeditious and accurate information exchange is critical.

3. Suppression Response

A suppression response will be initiated for all wildland fires that

- have a "no-go" determination made from the **Decision Criteria Checklist**,
- are human-caused regardless of FMU, or
- are within FMU-1.

All wildland fires receiving a suppression response will be accomplished commensurate with values to be protected, firefighter and public safety, and cost efficiency.

Prescribed fires or WFRBs reclassified as unwanted wildland fires are subject to a suppression response based on completion of a WFSA, Appendix J.

Notification of the appropriate Agency Administrator of a change in a fire's status is required. Consider requesting a resource advisor.

9.8.7 NPS Wildland Fire Implementation Plan (WFIP)

Following a "go" decision from the on-duty FPM, an analysis of information is necessary 24 hours after completion of Stage I to determine short-term implementation actions (see Fig. 4).

The stage II WFIP analysis should consider completion of the following.

- Fire behavior predictions and risk assessments
- **Short-Term Implementation Actions** (format in Appendix J)
- Complexity Rating (**Wildland and Prescribed Fire Complexity Rating Worksheet**, Appendix J)
- Periodic Fire Assessment (**Part I, Re-validation Checklist**, Appendix J) [should be completed (by the IC) to determine the appropriateness of continued management of fire for resource benefits and to confirm the decision pertaining to the need to develop and document the WFIP – Stage III]

Fire Use Decision

If the fire becomes active at some point and raises management concern, the decision by the IC (in consultation with the FPM) may be to actively manage the fire-use fire (limited holding, air attack, burnout, line construction, and mop-up actions are examples of some tactical options). Any combination of implementation actions can be employed, depending on factors such as fuel types, topography, barriers, local fire behavior, and available resources. The FPM will decide and document decisions (see above) and then direct resources. At this point, the decision from the **Initial Action Record** (if suppression or fire-use action is involved) will be relayed to the Agency Administrator. A resource advisor briefing also is considered.

WFIP Stage III: Long-term Implementation Actions (Appendix J)

This process assists the FPM in providing the Agency Administrator(s) with a long-term management strategy for the fire-use fire. However, this step need not occur until a threshold (**Threshold Conditions**, Appendix J) is reached or the periodic fire assessment process (see below) indicates the need.

Periodic Assessment Part 2: Stage III Need Assessment (Appendix J)

The periodic fire assessment provides a process to evaluate a going fire-use fire and determine if continued management for resource benefits is appropriate. Also, the need to escalate management to Stage III (long-term) and provision for the Agency Administrator's concurrence of the assessment and proposed action is included.

A number of possible products result from this assessment.

- Development of (NPS) or revision of (BLM) a WFSA if the fire is exceeding management's capability (i.e., a "no-go")
- Fully defined MMA (NPS) or Allowable Area (BLM), particularly with active fires (see below)
- Development of long-term fire behavior predictions using FARSITE, RERAP, and other predictive software
- Definition of long-term implementation actions
- Determination if an Incident Management Team (IMT) or other resources are indicated

NPS Maximum Manageable Area (or BLM Allowable Area)
The WFIP will define a specific geographical MMA for each fire managed as a WFRB. This feature defines the firm limits of management's capability to accommodate the social, political, and/or resource impacts of a wildland fire. It will not be subject to change after it is identified and approved in the WFIP. The MMA will be bounded by highly defensible barriers (natural and/or human-made) to fire spread or by potential for successful holding actions (i.e., indirect attack tactics). The mitigation actions that optimize MMA defensibility and firefighter safety are

- mechanical and physical non-fire tasks,
- specific fire applications, and
- limited suppression actions (including, but not limited to, line construction, reduction of fuels concentrations, reduction of vertical fuel continuity, creation of fuel breaks/barriers around values to be protected, blacklining/burnout, and directly limiting fire spread).

In the case of longer range spotting from the fire over the MMA, it shall be treated as a separate fire, and an AMR will be determined based on criteria specific to the new fire.

9.8.8 The Wildland Fire Situation Analysis

Responsibility: Agency Administrator
The WFSA is a decision-making process in which the Agency Administrator describes the situation, compares strategy alternatives, evaluates expected effects of each alternative, establishes objectives and management constraints, selects the preferred alternative, and documents the decision. It serves as a contingency to undesirable outcomes; if the selected alternative does not accomplish objectives, the WFSA can be amended.

A WFSA is developed when

- a BLM wildland fire is being managed for resource benefits (daily validation required),
- the fire changes status to an unwanted fire,
- it is used to analyze alternatives that will accomplish resource benefits in combination with protection objectives, or
- see also *threshold conditions* listed below.

According to Policy guidelines, the Agency Administrator (or representative) and the FPM and/or IC prepare the WFSA.

The following elements are required to be addressed in the WFSA.

- Current Situation
- Evaluation Criteria
- Alternatives
- Analysis of Effects
- Record of Decision

- Review/Evaluation/Update
- Probability of Success
- Consequences of Failure

Refer to *BLM Standards for Fire & Aviation*, Chapter 10, for details.

The following Agency threshold conditions trigger a WFSA.

- The BLM decision process (from the Initial Assessment) indicates a "go" for wildland fire allowed to achieve resource objectives (except FMU-1)
- The NPS Periodic Fire Assessment indicates that the fire is a "no-go" (i.e., one or more elements of the Decision Criteria Checklist are not being met with the fire)
- A prescribed fire in FMU-1 or FMU-2 exceeds prescription and conversion criteria specified in the prescribed fire burn plan (potential benefits)
- A fire completely breaches the MMA or "Allowable Area" (unwanted fire)
- A fire partially breaches the MMA or "Allowable Area" (potential benefits)
- A fire is projected to leave the Joint Agency planning area, and the adjoining jurisdiction will not/cannot accept management of the fire
- The Agency Administrator (NPS Superintendent) will not approve a WFIP

Interdisciplinary Team (IDT)

An interdisciplinary team (IDT) will be convened by the FPM or designee when any resource concerns arise, smoke impacts increase, or other conditions warrant an IDT advisory approach to defining alternatives for a WFSA.

MIST

All suppression tactics and support actions will be selected commensurate with potential fire behavior and minimizing impacts to values to be protected. These decisions must be informed and based on interdisciplinary inputs to the extent possible with respect to conditions on the ground. Tactical decisions should include consideration of

- guidelines specified in *RM-18* (NPS),
- guidelines specified in BLM *Standards for Fire & Aviation Operations*,
- protection protocols for cultural resources,
- minimum requirements for wilderness,
- assignment of a resource advisor if indicated for longer term actions, and
- special briefings of assigned personnel where values to be protected may become involved

9.8.9 Funding and Fiscal Tracking

BLM: Will assign accounts based on the type of wildland fire under management. Generally, the (2821) account is for fire suppression and (2823) is for wildland fire use for resource benefit.

NPS: FIREPRO accounts for these activities generally fall under the suppression account (PWE 249) or the WFRB (PWE 248) account.

9.8.10 Records And Documentation

Quality, long-term documentation records for all actions taken on a wildland fire are critical. The guidelines below will be followed.

Each agency is to follow internal policy with respect to records. All decision documents, monitoring data, supporting documentation, and operational documents (incident action plans, maps, unit logs, etc.) will be assembled and organized during and following a wildland fire management action.

Specifically, the fire report and file should contain the following.

Any written policies, guidelines or authority statements signed by Agency Administrator(s)

- Copy of the complete WFIP (NPS)
- Copy of the BLM or NPS WFSA
- ICS-209s
- Copies of purchase orders, personnel request orders, etc. associated with fire
- All situation maps
- Personnel rosters, time sheets
- Press releases, clippings, video tapes
- Accident reports
- All monitoring data, spot weather forecasts, internet printouts
- Documentation of financial charges made against the assigned account number
- Narratives and unit logs
- Rehabilitation plan

It is particularly important to include IC narratives (see above) in regard to the effectiveness of planned strategies, trigger points, holding actions, and other pertinent factors encountered during the fire.

In case of joint wildland fires across agency boundaries, copies will be made of the entire package for each agency.

9.8.11 Information and Interpretation

Wildland fire use actions should include provisions to provide timely and accurate wildland fire information. The following factors should be considered.

- Specific fire management objectives for involved agency(s)
- Information on fire location, behavior, and growth
- Information on fire effects
- Actions taken on the fire
- Any impacts on recreation users, visitors, public or private facilities, and services

Refer to Sec. 15, Public Information and Education, for additional guidelines.

9.8.12 Rehabilitation

Wildland fire effects are generally considered a natural part of a disturbance process. A major rehabilitation strategy is careful planning at all stages of a fire and skilled, reasoned implementation of minimum impact suppression techniques.

For large fires managed by an incident management team or fire-use management team, a rehabilitation assessment should be completed. For the NPS, the Intermountain Regional Office should be contacted for assistance. Similarly, the BLM State Fire Management Office should be contacted for guidance. If a rehabilitation team and plan preparation are determined to be needed, the team should be ordered through normal Zone channels.

General guidelines for rehabilitation teams are below.

- Waterbars will be installed on fire lines where erosion potential is high.
- Brush and other existing organic material will be moved back over fire lines where feasible.
- Campsites, helispots, staging areas, and other fire-related locations will be restored to natural conditions to the extent possible.

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- Burned areas will not be seeded (NPS); native seed-bearing plants cut along the fire line can be scattered to promote natural regeneration from seed.

10.0 PRESCRIBED FIRE MANAGEMENT

Prescribed fires are defined as all fires on parklands that are not wildland fires. These fires are planned, scheduled, organized, and implemented according to a rigorous protocol, the purpose of which is the safe accomplishment of approved resource objectives.

10.1 Scope

The joint prescribed fire program is guided by the following priorities.

1. Create defensible space around values to be protected.
2. Reduce hazard fuels accumulations in all FMUs.
3. Use fire as a resource tool to accomplish ecological objectives (FMU-2 and FMU-3).

The long-term objective is to treat fuels in FMU-3 to the point where the Unit can revert to a Fire Use for Resource Benefit strategy. Therefore, prescribed fire will be used along with non-fire strategies to manage fuels to a more natural level in this unit.

10.2 Joint Annual Program (Prescribed Fire and Non-Fire Treatments)

Under the Joint Plan, each agency will maintain and update annually a treatment schedule and map. Priorities for treatments are decided by the respective agency FPMs with staff input before the burn season (see Sec. 9.3).

A plan review process provides for proper review and approval procedures. General procedures are established for the agencies to follow and are listed below. However, it is important to recognize that each agency has internal protocols that also must be considered.

10.2.1 Prescribed Fire Treatment

The following protocols are suggested.

- Preparation of an annual program priority list and map for archaeological/biological survey by the agency FPM before January 15. The list identifies projects in priority order and is submitted to the appropriate agency administrator or operational representative for distribution to resource staff in the current year and for 1 year in advance of planned execution.
- Field surveys conducted based on individual project maps in accordance with Sec. 106 NHPA (National Historic Preservation Act) and the Biological Assessment for Listed Species (Sec. 7, Endangered Species Act) and internal agency policy.
- Upon completion of project surveys and clearances, written documentation to the FPM[12], including any mitigative action(s) required.
- Following mitigating actions, original copy of burn plan routed with attached clearances by the agency FPM/burnboss through agency-directed routing protocol to agency adminisirator or designee for approval a minimum of 90 days before projected ignition date.

Other annual actions (several are agency-specific) that should be considered by the FPM or assigned burnboss in implementing a project prescribed fire program are the following.

- Reconnaissance [Global Positioning System (GPS)] and burn unit layout and compliance work (involve resources staff as needed to identify values to be protected, etc.)
- On-site documentation, fire effects monitoring plot layout, JHA elements, logistics, and identified mitigation work; complete complexity rating
- Analysis of potential ignition patterns with prescriptions, weather, fuels, and topography

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[12] FPM or appropriate burn boss.

- Coordination of all burns w/grazing allotments (deferment), Zone, cooperators, and media
- Smoke management considerations, monitoring, modeling, and consultation with the NMEID
- Personnel management, fiscal analyses
- Pre-burn notifications
- Briefings, logistics, contingencies
- Go/no-go decision process
- Organization, implementation
- Followup coordination, evaluations, cost summaries, record keeping, reporting requirements (a DI-1202 will be completed for each burn and submitted via input through relevant agency channels within 10 working days after declared out date)
- Submit data for Geographic Information System (GIS) addition to prescribed fire thematic map

BLM specific burn blocks for NCA lands are named and categorized by the grazing allotment in which they are located. A narrative and map for the prescribed fire treatment schedule is in Appendix I.

NPS prescribed fire units and a 10-year schedule also are located in Appendix I. This program has been ongoing for at least one entry treatment for several listed units.

A prescribed fire burn plan will be completed for each project in the schedule, whether for mechanical treatment or prescribed fire treatment. Individual agency burn plan format (on floppy disk) will be followed. NPS prescribed fire plans will comply with requirements of RM-18, Chap. 10.

10.2.2 Non-Fire Treatment

Mechanical treatment methods will be a primary tool for management to reduce (hazardous) fuels continuity and create defensible space around values at risk. Prescribed fire follow-up treatments may or may not be employed.

Fuel-break construction should be identified on an appropriate GIS-compatible project location map (exact locations using a GPS).

Fuel break planning will consider the following guidelines (see also mitigation measures below).

- Some green-stripping to mask the thinning in areas used by visitors and recreationists
- Canopy thinned and feathered (or gradually opened) toward the area being defended against, with spacing necessary to prevent crownfire and/or "wind tunnel" effects
- Retention of a reasonable level of surface forbs and other plants to discourage exotic invasion
- Fuel-break width dependent on fuels conditions and other considerations
- Consider installation of key photo-points to monitor vegetative recovery, exotic invasion, etc.

All burn preparations involving pre-treatment with mechanical techniques will be outlined in a burn plan (on floppy disk in agency fire management office) and reviewed by appropriate resource staff as necessary. This may include, but is not limited to,

- snag felling, bucking in and around perimeter;
- thinning of tree densities along perimeter;
- pruning individual trees and brush along perimeter; and
- bucking and removal of logs near the control line only (through bucking into short lengths, piling, and burning on site)

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Mitigation Measures

The underlying concepts for these operations are routine application of the minimum requirement while providing for firefighter safety and minimizing risk of escape.

Specific mitigation techniques may include the following.

- Using existing or planned right-of-way construction lanes for fuel-breaks
- Considering a contract chipping unit for woody debris generated where fuelwooding is not feasible
- Considering lop-and-scatter techniques
- Considering species-specific, approved biocide treatments under direction of appropriate agency resource staff.

10.3 Personnel And Qualifications

All fire personnel assigned to prescribed fires will meet the requirements of the individual agency. Burn bosses assigned to prescribed fires will be certified according to complexity and in the fuel type proposed for treatment. Additionally, all prescribed fire personnel assigned to prescribed fires will meet all national requirements for training and experience.

10.4 Documentation and Reporting

Documentation of prescribed fire projects will be prepared and filed in accordance with each agency policy.

10.5 Critiques

All prescribed fires will be critiqued as deemed appropriate by the agency burn boss or FPM. Reviews can be convened by the NPS Superintendent (authority *RM-18*) or Field Office Manager (BLM *Standards for Fire & Aviation Operations*) as directed in agency policies.

11.0 AIR QUALITY/SMOKE MANAGEMENT

In May 1998, the Environmental Protection Agency (EPA) released the "Interim Air Quality Policy on Wildland and Prescribed Fires," which provides general policy direction through states down to agencies implementing fire programs. However, the regional haze rules are in proposed status and will be finalized at a later date.

The key document is the permit issued by the State of New Mexico for open burning. This normally is issued following review of agency intent (via permit application) to manage for emissions that result in minimal impact to the public and sensitive receptor sites. The Cooperative Agreement among the New Mexico EID and federal land management agencies will be the guiding document for the permitting process.

This section highlights the best available management measures to be taken or considerations to be made when planning fire-use decisions and prescribed fires. The key elements and criteria identified from EPA, New Mexico state, and agency policies are as follows.

Prescribed fire planning (burnplans) should include the following.

- Actions to minimize emissions (SASEM runs, ignition patterns, favorable dispersion factors, etc.)
- Evaluations of smoke dispersion (weather forecasts)
- Public notification and exposure reduction procedures (recreationists, residents)
- Air quality monitoring

Burn execution evaluation criteria should include the following.

- Smoke effects avoided (favorable dispersion, no intrusions to sensitive areas, staying within NAAQS)
- Compliance with applicable laws and adherence to policy

- Frequency of verified public complaints
- Cooperation with downwind jurisdictions, regulatory agencies, and land managers
- Were all of the smoke elements of the burn plan implemented?

WFSA process evaluated to assess smoke effects criteria to include the following.

- Consideration of short- and long-term smoke effects
- Consideration of impacts on sensitive areas (including Class I)
- Evaluation of how decisions were tied to specific air quality criteria

Effective smoke management is based in part on completion of the following tasks.

- Development/improvement of workable monitoring protocols
- Consideration/implementation of year-round prescribed fire operations
- Develop/improve on a practical compliance protocol and visibility thresholds with New Mexico Environmental Improvement Division (EID)
- Application for Wildland Fire Use shall be made on an annual basis to the New Mexico Environmental Department/Air Quality Bureau. Reference MOU 16-R3-07-0006.

12.0 FIRE-RELATED RESEARCH

The objective of fire-related research is to add cumulatively to scientific understanding and knowledge of the role of fire in the malpais ecosystems so that adaptive management practices are continually evolving. It is important that studies be conducted in conjunction with implementation of the Fire Management Plan.

Fire managers need sound, management-oriented science information with which to determine fire management objectives and strategies, natural ranges of variability for vegetation types, fire frequencies, fire effects, and historic fire intensities.

Specifically, the following general areas for agency-specific or joint agency fire-related scientific investigation should be taken into account.

- Understand more of paleo fire history (joint agency)
- Assess the effects of fire (prescribed fire/fire use) on old-growth ponderosa pine (joint agency)
- Assess ranges of fuels accumulation rates for various forest fuels (agency-specific)
- Understand the evolution of pinyon-juniper woodlands and the role of disturbance regimes such as fire in shaping this cover type; define a desired future condition for same (agency-specific)

13.0 MONITORING

The fire effects monitoring program supports joint agency objectives of the fire management program. However, the BLM has no specific policies relating to fire effects monitoring, and will employ NPS monitoring wherever feasible and authorized.

The goals of the joint-agency monitoring program are as follows.

- Verify that Joint Plan prescribed fire program objectives are being met through documentation and analysis of fire effects.
- Increase knowledge of fire behavior and effects on ecosystems.

- Document basic information for all prescribed fires and keep all monitoring information organized and properly backed-up.
- Adhere to standardized data collection techniques for FMH plots.
- Use information to help develop information for the public.
- Identify areas in which research should be initiated.
- Provide adequate training opportunities to crewmembers to further their career development.
- Follow trends in plant communities as related to fire effects.

Appendix G documents FMH-4 (Monitoring Type Descriptions), including statements of desired future condition, for the major monitoring types occurring in El Malpais National Monument. Additional monitoring types and descriptions may be developed in the future. A monitoring plan also is included in Appendix G and will be updated according to a schedule described in the plan. The Bandelier National Monument fire effects monitoring crew is responsible for implementing the monitoring program for El Malpais National Monument.

Each NPS burnplan, Wildland Fire Implementation Plan, or other project plan that involves fire treatment shall contain monitoring objectives that are designed around the resource/fire treatment objectives. The monitoring objectives detail the immediate, short-term and long-term information necessary to adequately quantify and later assess fire effects. Evaluation of monitoring data is a responsibility of Bandelier National Monument.

14.0 SAFETY

Managing a total fire program is among the highest risk operations that any land management agency can undertake. The first priority consideration in any fire management action is firefighter and public safety.

Many human safety-related issues focus on the altered vegetative communities in the Monument and NCA. One consequence of the current high levels of hazard fuels resulting from years of fire exclusion is related to the potential for uncontrollable crownfire behavior. The prescribed fire program is part of the mitigating action, particularly in the developed areas. Creation of defensible space as a safety-related action requires careful planning along with prudent applications of mechanical fuel reduction and debris burning. The same can be said for the fuels management program on agency wildlands where firefighter safety may be compromised during severe years when resistance to control is high to extreme.

Guidelines

- All fire personnel shall meet appropriate qualifications, including medical requirements, for all fire assignments (per NPS *RM-18, DO-18* and BLM *Standards for Fire & Aviation*).
- Fire personnel shall be equipped with personal protective equipment appropriate to their incident assignments.
- All fire personnel and cooperators will comply with NWCG, BLM, and NPS fitness and personal protective equipment standards while assigned to fire incidents except for initial action by mutual aid cooperators.
- Fire personnel assigned to fire line operations will complete a minimum of 8 hours of basic wildland fire training, 8 hours refresher for FFT2, and safety training before incident assignments.
- All wildland fire incidents that result in human entrapment, fatalities, or serious injuries or result in incidents with potential for the above will be reported and investigated.
- All safety standards and guidelines identified within the Interagency Incident Business Management Handbook and SWA guidelines will be followed.
- Management of all wildland fire incidents will comply with interagency risk management standards.
- The JHA will be used for projects that present potential hazardous activities and for jobs that require employee use of out-of-the-ordinary personal protective equipment; refer to *RM-18* (NPS) or BLM *Standards for Fire & Aviation Operations* for JHA process and format.

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- Documented safety meetings will be conducted as needed under the supervision of the Suppression Manager and Prescribed Fire Manager.
- Accidents will be reviewed to determine areas needing improvement, not as a punitive measure, normally held between the supervisor and the employee.
- All safety protocols for the aviation program will follow agency-specific standards; The *Interagency Helicopter Operations Guide* (IHOG) is now fully used for helicopter operations.

15.0 PUBLIC INFORMATION AND EDUCATION

Public information and education is the cornerstone of a successful joint fire management program. An informed and supportive agency staff, local and visiting public, recreationists, partner organizations, and youth will contribute greatly to the success of the fire program and the resources that it is designed to benefit.

Joint strategies for the public information and education program are the following.

- Establish a network of contacts and develop a proactive process that disseminates current and accurate fire information to the agency staffs, community, general public, media, etc.
- Incorporate the principles of fire's role in the El Malpais ecosystem and the importance of fire as a resource management tool into Monument and NCA interpretive programs, exhibits, video, interpretive trails through old burns, and periodicals, brochures, civic group presentations.
- Establish a joint-agency website to promote prevention and wildland fire education objectives
- Forward all fire-related press releases to the respective agency administrator or public information officer and keep members of the administrative staffs well informed of fire activity.
- Display roadside sign exhibits.
- Develop public information programs that promote the benefits of firewise community planning, defensible space, and mechanical fuel reduction.
- Establish rapport with local press and media representatives and accommodate all interview requests that will benefit the joint agency planning area by promoting the fire program.

The purpose of the step-up configuration is to provide a logical sequence of actions to initiate in response to changing levels of fire danger or active fire status. The step-up plan (Table 5) is outlined below.

Table 5. Joint Public Information "Step-up" Plan.

PRE-FIRE ACTIONS	WILDLAND/PRESCRIBED FIRE: ON-GOING
• Include fire information on website. • Assist agency public contact personnel with fire management exhibits, visitor program information, etc. • Prepare and distribute flyers with appropriate messages to Park Concessions and residences. • Forward to the agency administrator all press releases/media information for review and approval. • Use local radio and public-access channel (Grants) for briefing and updating prescribed fire information as needed.	In addition to Pre-Fire Actions listed on left side, consider the following. • Place appropriate notification signs along roadways and overlooks, recreation sites, trail registers, BLM Ranger Station, NPS Bandera District Office and Grants Headquarters, etc. • Prepare information briefs on going fires and update regularly. • Answer calls and other public inquiries as directed by FPM. • Respond to directions of FPM as required. • Provide current fire information for BLM rangers and NPS personnel to disseminate as necessary.

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16.0 PROTECTION OF SENSITIVE RESOURCES

It is important that wildland and prescribed fire personnel establish and maintain close coordination with relevant agency resource staff when managing for the protection of sensitive resource values. These values may include, but are not limited to, threatened and endangered species, cultural resources, historic sites, scenic values, and administrative facilities.

16.1 Cultural Resources

Cultural resources are irreplaceable and non-renewable. Therefore, any potential negative impacts would be cumulative and permanent.

Mitigation measures to protect cultural resources will be specified by a staff cultural resource specialist, either assigned to review project level plans or to act as and RA on wildland and prescribed fires.

Approved mitigation strategies may involve one or more of the following.

- Isolating sites or features that are deemed vulnerable to fire
- Treating sites with approved retardant
- Removing heavy fuels that cause long-duration heating
- Temporarily re-locating cultural materials under direction of a cultural resource specialist
- Overhead and fire crew briefings on specific protective measures for cultural sites

16.2 Natural Resources

Species locations and/or preferred habitats should be obtained during the planning phase of project work. This should be accomplished in consultation with the NPS Chief, Resources Management (EL Malpais National Monument) or the BLM Field Office staff Biologist assigned to the NCA or designated representatives.

The Environmental Assessment contains a discussion of mitigating actions that can be taken by fire staff personnel to avoid any sensitive species or habitat. The Environmental Assessment and Record of Decision are in Appendix D.

16.3 Infrastructure and Developments

Interface mitigation techniques should be used to prevent or reduce any potential negative impacts to modern facilities, developments, or other values on joint agency lands.

17.0 FIRE CRITIQUES AND PLAN REVIEW

This Joint Plan is subject to informal review annually and formal review every 5 years. Formal review should be accomplished jointly with alternating agencies acting taking the lead.

Appendix L will contain a compendium of policy or other official procedural changes as they become approved and distributed.

Critiques will be performed using the following guidelines.

- All fires occurring on either NCA or Monument lands will receive a minimum review to evaluate successes and problem areas such as initial response, "hotline" review, control strategies employed, safety concerns, and need for equipment replacement.
- Reviews will be conducted by one of the following: IC, burnboss, FPM, or as assigned by agency administrator.
- Incident management teams will participate in a close-out session at the discretion of the agency administrator to identify any areas of concern or of particular success and take care of unfinished business

before transition to a local organization (refer to NPS *RM-18*, Chapt. 13 or BLM *Standards for Fire and Aviation Operations Operations*, Chapt. 11)

For the NPS, a regional or national review may be indicated if one of the following occurs.

- Fire crosses Monument boundary onto another jurisdiction other than BLM.
- Fire resulted in adverse public or media attention.
- Fire involved serious injury or fatality, significant property damage.
- Fire results in controversy involving another agency or ownership.

All entrapments and shelter deployments will be reported and investigated as soon as possible following the incident. Follow National Interagency Fire Center (NIFC) guidelines for this administrative action.

Changes to this plan that require approval and concurrence from both agency administrators will be submitted with a cover sheet for signatures and dates, and will replace the original text following signing.

18.0 PREPARATION, CONSULTATION, AND COORDINATION

The following agencies were consulted.

- Cibola National Forest
- New Mexico State Forestry
- New Mexico State Environmental Improvement Division
- Ramah Navajo Chapter, Navajo Nation
- Acoma Pueblo
- Cibola County
- Zuni Tribe

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APPENDIX B. GLOSSARY OF TERMS AND ACRONYMS[*]

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Conditional Wildland Fire Use. Refers to a temporary Fire Management Unit (see definition below), where once fuels management objectives are accomplished, the Unit will be added to the Wildland Fire Use (see definition) Unit.

Fire Management Plan. A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch, prescribed fire plans, and prevention plans.

Fire Management Unit. Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMUs are delineated in FMPs. These units may have dominant management objectives and preselected strategies to accomplish these objectives.

Holding Actions. Planned actions required to achieve wildland and prescribed fire management objectives. Specific holding actions are developed to preclude fire from exceeding the MMA (or Allowable Area).

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Management Action Points. See Trigger Points.

Maximum Manageable Area (MMA).[**] The firm limits of management capability to accommodate the social, political, and resource impacts of a wildland fire. When established as part of an approved plan, the general impact area is fixed and not subject to change. If they are developed after the ignition, their definition will occur during the Wildland Fire Implementation Plan Stage III process. In the event a fire occurs in a preplanned MMA and the local unit determines that this MMA is not the best suited alternative for present conditions, a new MMA can be developed as part of the Stage III process. After this occurs, the Stage III MMA becomes the firm limits of the fire and is fixed.

Mitigation Actions. Those on the ground activities that will serve to increase the defensibility of the MMA; check, direct, or delay the spread of fire; and minimize threats to life, property, or resources. These actions will be used to construct firelines, reduce excessive fuel concerntrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or resources, create "blacklines" through controlled burnouts, and to limit fire spread and behavior.

Preparedness. Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Prescribed Fire. Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescription. Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

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[*] Certain terms defined below only apply to NPS; refer to text box below each term to describe its BLM equivalent.

[**] BLM Allowable Area. References to general impact area limits are the same; a WFSA will be prepared which will coincide with NPS Stage II WFIP. Any change in conditions that require a new Allowable Area, a revised WFSA will be required.

Trigger Points. Either geographic points on the ground or specific points in time where an escalation or alteration of management actions is warranted. These points are defined and the management actions to be taken are clearly described in an approved Wildland Fire Implementation Plan (WFIP) or Prescribed Fire Plan. Timely implementation of the actions when the fire reaches the action point is generally critical to successful accomplishment of the objectives.

Wildland Fire. Any nonstructure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

Wildland Fire Implementation Plan (WFIP). A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (ie, fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Situation Analysis (WFSA).[***] A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Suppression. An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize the loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

Wildland Fire Use. The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in FMPs. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use" which is a broader term encompassing more than just wildland fires.

[***] BLM WFSA. The WFSA will serve as the decision document which will analyze and select strategies for managing wildland fire for resource benefits. It is important that early stages be documented as to selected management response.

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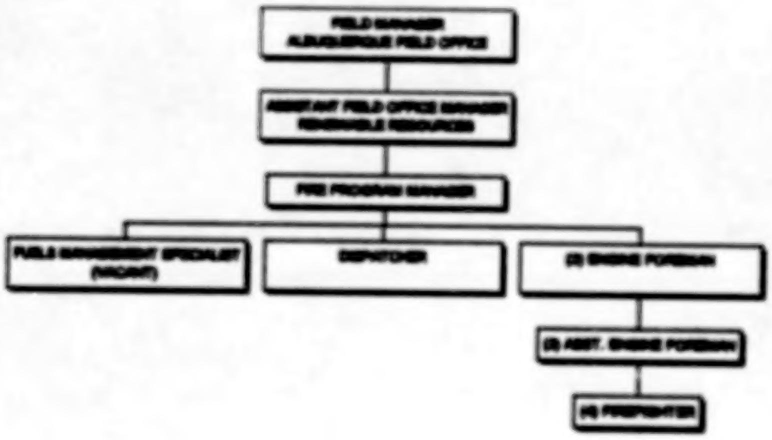
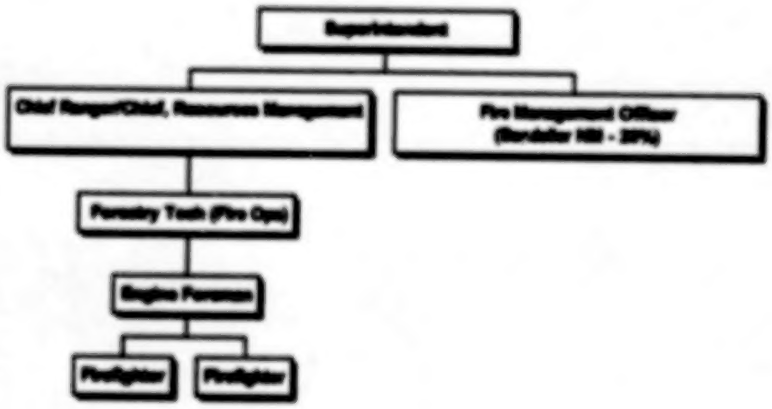
APPENDIX C. ORGANIZATION CHARTS

Organizational Chart - Albuquerque Field Office



Organizational Chart - El Malpais NM



REVIEW COPY

APPENDIX D. NEPA COMPLIANCE

See attached Environmental Assessment.

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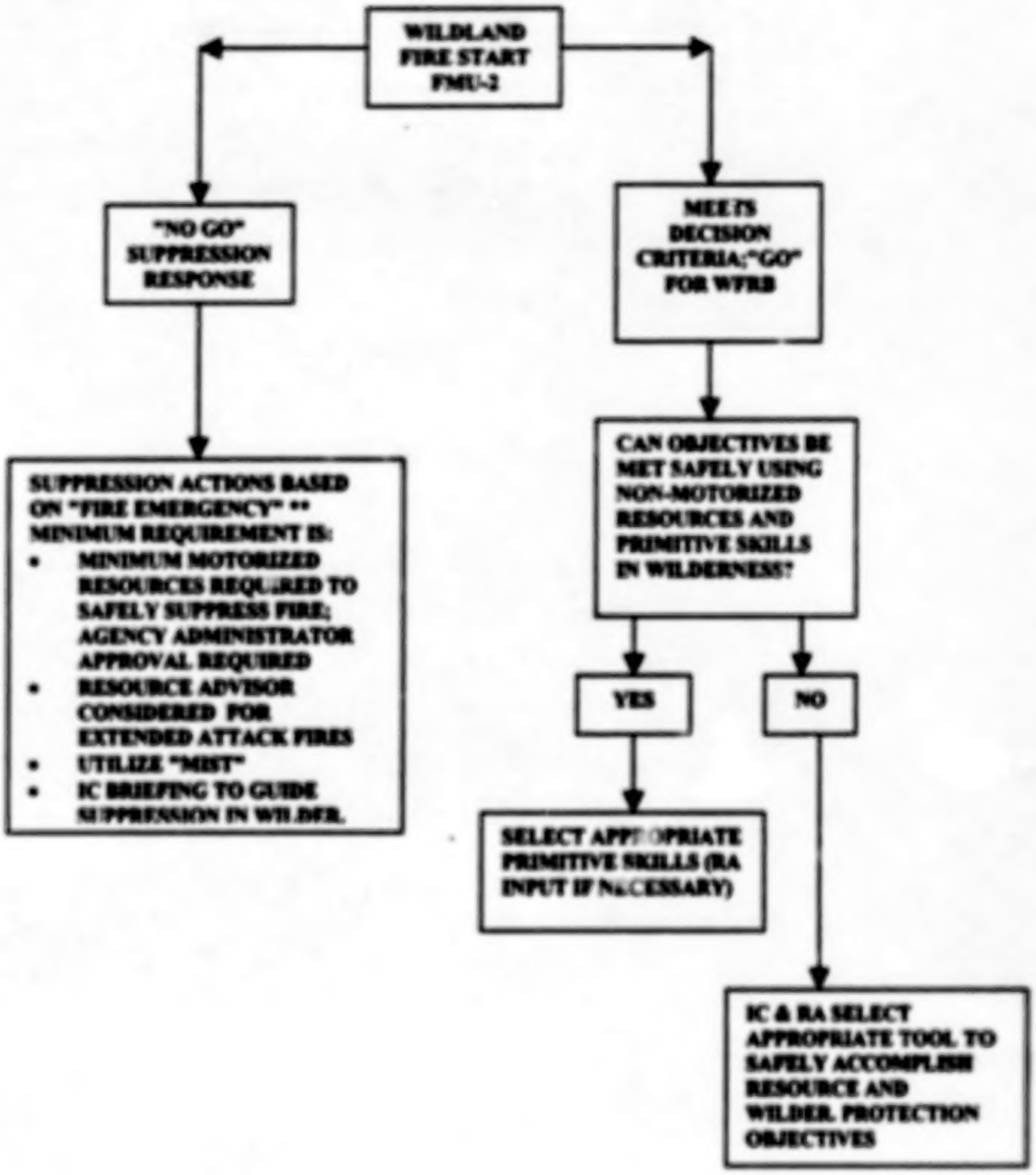
APPENDIX E. AGENCY DOCUMENTATION

1. Joint Minimum Tool Flow Chart (FMU-2)
2. Joint Minimum Impact Suppression Tactics (MIST) Guidelines
3. Initial Attack Operating Plan, Albuquerque Zone
4. Delegation of Authority (NPS)
5. Delegation for Field Office Fire Management Officers (BLM)
6. Pre-Attack Plan, El Malpais NM (in revision)

1. JOINT MINIMUM TOOL FLOW CHART (FMU-2)


WILDLAND FIRE START FMU-2
"NO GO" SUPPRESSION RESPONSE
MEETS DECISION CRITERIA; "GO" FOR WFRB
SUPPRESSION ACTIONS BASED ON "FIRE EMERGENCY" ** MINIMUM REQUIREMENT IS:
• MINIMUM MOTORIZED RESOURCES REQUIRED TO SAFELY SUPPRESS FIRE; AGENCY ADMINISTRATOR APPROVAL REQUIRED
• RESOURCE ADVISOR CONSIDERED FOR EXTENDED ATTACK FIRES
• UTILIZE "MIST"
• IC BRIEFING TO GUIDE SUPPRESSION IN WILDER.
CAN OBJECTIVES BE MET SAFELY USING NON-MOTORIZED RESOURCES AND PRIMITIVE SKILLS IN WILDERNESS?
YES
NO
SELECT APPROPRIATE PRIMITIVE SKILLS (RA INPUT IF NECESSARY)
IC & RA SELECT APPROPRIATE TOOL TO SAFELY ACCOMPLISH RESOURCE AND WILDER. PROTECTION OBJECTIVES

**"FIRE EMERGENCY" DEFINED AS WILDLAND FIRE BURNING INSIDE FMU-2 (WILDERNESS/MONUMENT) THAT MAY THREATEN HUMAN LIFE, PROPERTY, OR CROSS THE BOUNDARY AND ENDANGER LIFE AND PROPERTY.

2. JOINT MINIMUM IMPACT SUPPRESSION TACTICS (MIST) GUIDELINES

Interior agency fire management guidelines require the fire manager and firefighter to consider and select on-ground management tactics that are commensurate with the fire's existing and potential fire behavior, and will also leave minimal impact to the environment.

The intent of these guidelines are to serve as a checklist for all assigned wildland fire personnel. Application of minimum impact fire management techniques originate with instructions that are clear, understandable, stated in measurable terms, and communicated verbally and in writing. Evaluation of these tactics both during and after implementation will further good land stewardship ethics during all fire management operations.

AGENCY ADMINISTRATOR - INCIDENT MANAGEMENT TEAM - FIREFIGHTER CONSIDERATIONS FOR MINIMUM IMPACT SUPPRESSION TACTICS (MIST)

The following guidelines are for agency administrator, incident management team members, incident overhead and firefighters to consider. Some or all of these items may or may not apply, and are situation-dependent:

Command and General Staff:

1. Evaluate each and every suppression action during planning and strategy sessions for conformance with agency administrator's minimum impact objectives.
2. Include agency resource advisor/representatives in sessions stated above.
3. Discuss minimum impact management techniques with overhead during briefings to ensure understanding of planned tactics.
4. Ensure minimum impact management techniques are implemented during resource-disturbing activities.

Planning Section.

1. Use resource advisor to evaluate planned management tactics commensurate with land and resource protection objectives, and incident objectives.
2. Utilize an assessment team to facilitate a different perspective of the overall situation.
3. Use additional consultation from the public or outside the agency, especially for long-term fire situations.
4. Adjust line production rates to reflect the minimum impact tactics.
5. Consider a dozer brush blade for line construction when dozer use is determined necessary.
6. Leave some green trees randomly in the fireline.
7. Ensure that instructions for MIST are included in the IAP (Incident Action Plan).
8. Detail and quantify mop-up objectives inside the fireline.
9. If helicopters are assigned, consider long-line delivery versus additional helispot construction.
10. Consider coyote camp versus fixed campsites in sensitive areas.
11. In extremely sensitive areas, consider use of portable facilities (sanitation, cooking, etc)

Operations Section.

1. Emphasize minimum impact management techniques during each operational period briefing, and for division briefings.
2. Explain expectations for instructions included in IAP.
3. Consider judicious use of aircraft.
4. Use natural openings for possible helispots.
5. Monitor suppression tactics.
6. Distribute field guide to appropriate supervisory personnel.

Logistics Section.

Ensure actions performed around areas other than Incident Base, ie, dumpsites, camps, staging areas, helibases, etc. result in minimum impact on the environment.

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Division/Group Supervisor and Strike Team/Task Force Leader.

1. Ensure crew superintendents, crew reps and single resource bosses understand what is expected during the operational period.
2. Discuss minimum impact tactics (MIST) with crew(s).
3. Ensure that dozer and falling bosses understand expectations.
4. Monitor suppression tactics/conditions.

Crew Superintendent.

1. Ensure/monitor results expected.
2. Discuss MIST with crew.
3. Provide timely feedback on implementation of MIST.
4. Look for opportunities to further minimize impact to land and resources during suppression and mop-up.

IMPLEMENTATION GUIDELINES

Safety will not be compromised. Follow the 10 Standard Orders and 18 Situations that Shout Watch Out.

Line Construction.

1. Select procedures, tools, and equipment that least impact the environment.
2. Consider the use of water as a tactic versus line construction.
3. In light fuels, consider:
    - Cold trailing
    - Use of natural barriers
    - Consider burn-out
    - If constructed line is necessary, use minimum width and depth to check fire spread and patrol frequently.
    - Minimize bucking in line construction

4. Aerial fuels -- brush, trees, snags
    - Minimize tree cutting, including burned trees and snags;
    - Live trees will not be felled unless determined they could pose a threat to the line; if tree felling is necessary, flush-cut stumps.
    - Scrape around base of trees near fireline versus felling

5. Indirect attack
    - Dont fall snags on the intended unburned side of constructed fireline, unless an obvious safety hazard (consult with division safety officer)
    - Consider alternatives to falling, ie, explosives, bucket drops, etc.

Mop-up.

1. Consider using "hot-spot" detection devices along perimeter to locate heat.
2. Do minimal spading;
3. Cold-trail charred logs near fireline
4. Minimize bucking of logs to check for heat; roll logs
5. Refrain from building bone-yards
6. Allow large materials near line to burnout if possible
7. Allow burning trees/snags to burnout, if identified as safety precaution and communicated
8. Falling should be a last resort for burning trees/snags; use soil & water

Campsites and personal conduct.

1. Use existing campsites.
2. If existing campsites unavailable, consider sites away from visitor access routes and destinations.
3. Select impact-resistant sites such as rocky or sandy soil, but avoid sensitive meadows, along streams or wetlands
4. Change camp location if ground vegetation in and around the camp shows signs of excessive wear.
5. Do not clear vegetation or trench to create bedding spots
6. Toilet sites should be located minimum of 200 feet from any water source. Catholes should be dug 6-8 inches deep
7. Select alternative travel paths between camp facilities, and between camp and fireline

General rehab guidelines.

1. Firelines.
    - After fire spread is checked, fill in deep/wide firelines, and under- cut trenches
    - Waterbar as necessary
    - Ensure stumps are flush-cut
    - Camoflage cut stumps near visitor use areas or routes
    - Scatter any trees or large brush to avoid unnatural appearance where necessary

2. Camps.
    - Restore to natural conditions as possible.
    - Scatter firerings, charcoal, blend into natural surroundings
    - Pack out all trash, garbage and unburnables
    - Remove obvious signs of human activity to extent possible (flagging, foil, litter, etc)
    - Restore helispots
    - Backfill latrines and catholes.

3. INITIAL ATTACK OPERATING PLAN, ALBUQUERQUE ZONE

REVIEW COPY

ALBUQUERQUE ZONE

INITIAL ATTACK PLAN

MARCH 19,1998

This Operating Plan is between the United States Department of Interior; U.S. Fish and Wildlife Service (USF&WS), National Park Service (NPS), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), the United States Department of Agriculture-Forest Service (USFS), and the State of New Mexico; Energy, Minerals, and Natural Resources Department's Forestry Division (FD).

I. AUTHORITY

Authority of this Operating Plan is derived from and part of the current statewide Joint Powers Agreement. Initial Attack Coordination Meeting, between the above-mentioned Federal and State agencies, which calls for the preparation and adoption of an Initial Attack Plan and initial attack zones. As adopted and amended this Initial Attack Plan and zones will become part of the current Joint Powers Agreement as exhibits.

II. PURPOSE

The purpose of this Operating Plan is to establish an agreement for wildfire initial attack procedures for the Albuquerque Zone, State of New Mexico.

III. RESPONSIBILITY

It is mutually agreed that each party of this Initial Attack Plan will independently perform initial attack services as defined in Section IV below within those zones for which they have assumed that responsibility. Such initial attack action shall continue until the fire is either declared out , escapes initial attack or is determined to a management response fire.

If for any reason the initial attack agency cannot perform those initial attack services, the responsible agency shall be notified as soon as possible.

It is mutually agreed that each party of this Initial Attack Plan will retain ultimate responsibility for all fire management actions on lands under its administrative jurisdiction.

IV. DEFINITIONS

A. Initial Attack means the total efforts undertaken by the responding agency to either suppress or implement the appropriate action on a fire up to the point in time where such effort is determined to be unsuccessful and/or the fire is declared an escaped fire. Reimbursable work begins when the responsible agency is notified of the escaped fire or the determination of management response.

B. Escaped Fire means a wildfire that exceeds the suppression capabilities of the initial attack effort.

C. Incident Commander means the individual responsible for the management of the fire incident.

D. Responsible Agency means the federal or state agency that has the responsibility for fire protection on the lands which the fire is burning.

E. Initial Attack Zones means that agreed upon areas assigned to each party as its responsibility for Initial Attack efforts.

F. Notification of Initial Attack Action is documentation between the initial attack agency and the responsible agency of dispatch action taken following the report of a fire.

G. Initial Attack Agency is that agency which has negotiated annually the closest and most available fire protection resources for a designated geographical area.

H. Management Response are specific actions taken in response to a wildland fire to implement protection and fire use objectives.

V. DESIGNATED ZONES OF RESPONSIBILITY

A. Initial attack zones have been established on closest and available fire protection resources and capabilities of the designated initial attack agency. A map of these zones is attached hereto and made a part of this plan (Exhibit 1). The designated initial attack zones are based on historical wildfire incidents and are agreed to by off-setting for Federal and non-Federal expenditures of funds, and thereby mutually beneficial and cost effective. Also, it is agreed that Federal protection (cost) on non-Federal land will not exceed the protection by the State. Conversely, the State will not expend funds to a greater extent in protecting Federal land than would the Federal agencies in protecting Federal lands.

B. The agency responsible for initial attack should make reasonable effort to contact private landowners in advance of fire season. The objective of such contacts is to briefly explain the initial attack responsibilities and obtain gate keys or permission by the landowner to cut fences or gates for access to fires. Any damage to private lands for access should be restored following control of the fire. These contacts should be made by local unit personnel who have the assigned initial attack responsibility.

C. For specific management areas designated by the responsible agency the initial attack agency will initial attack fire in those areas commensurate with the fire management objectives for that area.

VI. SPECIFIC PROVISIONS

A. Initial Attack

1. Communication. Each agency will submit an initial report to cooperating agencies of their available resources by May 1 of each year. This report shall be updated as changes occur.

a. Prompt notification to the responsible agency as soon as practical after the initial dispatch. See Exhibit II.

b. The notification of the Initial Attack Action Report will be communicated to the responsible agency within 24 hours of the initial dispatch. See Exhibit II.

c. Authorization has been given between agencies to exchange radios and radio frequencies for fire suppression activities.

d The responsible agency will provide guidance to the initial attack agency for special objectives.

2. Coordination

a. Initial attack agency shall abide by responsible agency's procedures in dealing with ownership involved.

b. The initial attack agency will continue dispatching services on fires for which initial attack actions are being undertaken.

c. Payment. The initial attack agency will bear the initial attack costs unless otherwise negotiated.

d. Coordination. A zone coordination group comprised of zone board members or their designees will be established when the need arises.

e. The responsible agency will provide maps and fire management objectives for the designated management areas to zone dispatch and affected initial attack agencies prior to the fire season.

f. The need for a Resource Advisor will be determined by the responsible agency.

B. Escaped Initial Attack Fire

1. Communication

a. The initial attack Incident Commander shall notify the dispatcher when the fire has escaped initial attack.

b. The time of escape, date, from whom, and to whom the report is made, must be documented by the dispatcher, which must be reported immediately to the responsible agency. See Exhibit III.

c. In situations where the responsible agency requests the initial attack agency to continue suppression actions , an Incident Status Summary (ICS-209) must be submitted daily to the responsible agency.

2. Coordination

a. Responsible agency will initiate whatever action is necessary to suppress the fire and assume suppression control of the fire as soon as qualified fire personnel arrive at the fire.

b. As appropriate, suppression plans shall be negotiated and agreed to by coordinating agencies.

c. Dispatch. Agencies involved will negotiate and agree who will have the dispatching assignment.

3. Payment

a. Upon notification of an escaped fire, the responsible agency assumes fiscal responsibility as per current statewide Joint Powers Agreement for agencies with wildfire protection responsibilities.

b. Fires that are entirely on lands under State jurisdiction: Upon notification of an escaped fire, the state will designate a comptroller or authorized individual to approve expenditures and fiscal responsibilities.

c. Initial attack agency shall submit an estimate of reimbursable suppression cost to the responsible agency within 30 days from the time that the service was rendered. See Exhibit IV.

VII. GENERAL PROVISIONS

A. News Releases. Involved agencies will coordinate news release items pertaining to the current fire situation to the media.

B. Mop Up and Abandonment Checks. The initial attack agency will be responsible for mop up and abandonment checks, unless otherwise negotiated.

C. Fire Statistics (Fire Report, Records, etc.).

1. The origin of the fire denotes the responsible agency.

2. The responsible agency has the responsibility of preparing their statistical fire report. Information for this report shall be provided by the initial attack agency.

D. Effective Date. This plan is effective when the responsible agency has signed the plan.

E. Review and Revisions.

1. This plan will be reviewed annually before March 15 of each year.

2. The term of this agreement shall be five (5) years and coincide with the current statewide JPA. Participation in the Initial Attack Plan may be terminated by any party by notification in writing to all other parties at least 90 days prior to the intended date of termination. By such termination, no party may nullify obligations already incurred for performance or failure to perform prior to the notice of termination. Interim modifications of this plan may be made subject to agreement by parties concerned to correct unworkable situations.

3. Changes in initial attack jurisdictional areas will be made as attachments to this plan and will be signed only by those parties involved in the jurisdictional changes. Amendments will be submitted to the Forestry Division to be placed in the Joint Powers Agreement.

4. Copies of the master Joint Powers Initial Attack Plans and maps of initial attack zones will be maintained by the Forestry Division.

5. Individual signature sheets will be attached to the final original copy.

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EXHIBITS

- I. Albuquerque Zone Initial Attack Zone Map(s)
- II. Notification of Initial Attack Action
- III. Notification of an Escaped Fire
- IV. Fire Reimbursement Estimate

REVIEW COPY

EXHIBIT I

ALBUQUERQUE ZONE

INITIAL ATTACK ZONE MAP(S)

(MAPS ON FILE, ALBUQUERQUE ZONE, BLM ALBUQUERQUE FIELD OFFICE, AND EL MALPAIS NATIONAL MONUMENT)

EXHIBIT II

NOTIFICATION OF INITIAL ATTACK ACTION

______________________ UNIT

1. TO (Responsible Agency):
2. FROM (I.A. Agency):
3. BY (Dispatcher):
4. INCIDENT NAME:
5. DATE OF DISCOVERY:
6. TIME OF DISCOVERY:
7. LAND STATUS:
8. LEGAL T: R: S:
9. GENERAL LOCATION:
10. SIZE:
11. COVER (Fuels):
12. GENERAL FIRE BEHAVIOR:
13. CAUSE:
14. RESOURCES RESPONDING:
15. DATE OF NOTIFICATION:
16. TIME OF NOTIFICATION:
17. REMARKS:

EXHIBIT III

NOTIFICATION OF AN ESCAPED FIRE

1. TO (Responsible Agency):
2. FROM (I.A. Agency):
3. BY (Dispatcher):
4. FIRE NAME:
5. LEGAL T: R: S:
6. DATE OF ESCAPE:
7. TIME OF ESCAPE:
8. SIZE:
9. RECEIVED BY (Parent Agency):
10. DATE OF NOTIFICATION:

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EXHIBIT IV

FIRE REIMBURSEMENT ESTIMATE

SEND TO:

State Forester
New Mexico State Forestry Division
P.O. Box 1948

Fe, New Mexico 87504-1948

DO NOT WRITE IN THIS BLOCK

Date Received:
Approved by:
Amount of
Encumbrance:________________ Santa

Voucher No.:
Line Item No.:
Date Paid:

AGENCY REQUESTING REIMBURSEMENT:

______________________________ ________________
Billing Date

______________________________ ________________
Date Payment Due

FIRE IDENTIFICATION DATA

STATE FIRE NUMBER

FIRE NAME (STATE)

DATES OF FIRE INCIDENT

FIRE NAME____________ FIRE NUMBER________________

ESTIMATED REIMBURSABLE SUPPRESSION COSTS

I. Payroll.. $
II. Travel.. $
III. Equipment (Description)
______________________________.......... $
IV. Aircraft (Description of Aircraft)
  A. Fixed Wing________________.......... $
  B. Rotary________________.......... $
V. Retardant
  A. Fire Order Numbers________________.......... $
  B. Gallons of Retardant Delivered________.......... $
VI. Supplies
  A. Fire Order Numbers________________.......... $
  B. Type of Supplies Shipped (list)
    1. ________________.......... $
    2. ________________.......... $
    3. ________________.......... $
    4. ________________.......... $
    5. ________________.......... $
    6. ________________.......... $
    7. ________________.......... $

8. ______________________________ __________ $

VII. Indirect Cost _____% ______________________________ $

If there are any questions pertaining to this reimbursement request, who should be contacted?

NAME______________________ **TELEPHONE NO. (COMMERCIAL)**____________

4. DELEGATION OF AUTHORITY (NPS)

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National Park Service
El Malpais National Monument
P.O. Box 939
Grants, New Mexico 87020

Date: ____________________ **Time:** ____________________

To: ____, Incident Commander

From: Superintendent, El Malpais National Monument

Subject: Delegation of Authority

As Superintendent of El Malpais National Monument, I have the ultimate responsibility for protection of the park's resources, visitors and employees. By means of this memorandum, I am delegating authority to manage the _________________________Fire to you and your Incident Management Team. My agency administrator's representative will be _______________________.

This is an area of high environmental quality and sensitivity. Much of the park is under consideration for wilderness designation.

Objectives for fire management are:

1. Safety of suppression resources and the public is the highest priority objective. Broken terrain, lava flows, and any nightime operations is hazardous. Operational decisionmaking must consider these hazards.

2. Fire suppression operations must not interfere with natural processes or alter natural conditions, and only to the extent necessary to protect human life and property. MIST guidelines and wilderness suppression minimum tool guidelines are contained in the Joint Fire Management Plan, and are to be considered in consultation with the assigned Resource Advisor.

3. Burned acres are much preferred over long-term suppression scars, and should be factored into decisionmaking.

4. Cultural resources must receive appropriate protection. Consultation with the Cultural Resource Specialist will be made available to provide appropriate information and input.

5. Kipukas (meadows surrounded by lava) and lava tubes are particularly sensitive resources.

Resource Advisor(s) assigned: ____________________________; ____________________________.
Information Officer assigned: ____.

A briefing package is attached.

____
Superintendent
El Malpais National Monument

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GUIDELINES FOR INCIDENT MANAGEMENT TEAM RELEASE

NATIONAL PARK SERVICE - EL MALPAIS NM

1. The fire is declared controlled.
2. Incident base/camp has been demobed except facilities necessary to complete remaining work assignments.
3. The fire package is finalized and complete and forwarded to the Chief, Resource Management.
4. Rehabilitation work is completed to the extent agreed upon in the approved Rehab Plan.
5. All overhead and crew performance ratings are completed and submitted.
6. All claims have been investigated, processed and submitted to OWCP, or are ready for submission (property damage/loss).
7. Overhead team debriefing/closeout session between key park and IMT staff is completed.

5. DELEGATION FOR FIELD OFFICE FIRE MANAGEMENT OFFICERS

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DELEGATION FOR FIELD OFFICE FIRE MANAGEMENT OFFICERS

______________________________, Fire Management Officer for the Albuquerque Field Office, is delegated authority to act on my behalf for the following duties and actions:

1. Represent the BLM in the Southwest Area Multi-agency Coordinating Group in setting priorities and allocating resources for fire emergencies.

2. Coordinate all prescribed fire activities for the Albuquerque Field Office and suspending all prescribed fire and issuance of burning permits when conditions warrant.

3. Assure that only fully-qualified personnel are used in wildland fire operations.

4. Coordinate, preposition, send and order fire and aviation resources in response to current and anticipated zone fire conditions.

5. Coordinate with the Albuquerque Zone Interagency Dispatch Center on behalf of the BLM.

6. Request and oversee distribution of Severity funding for Field Office Fire and Aviation.

7. Approve Fire Program requests for overtime, hazard pay, and other premium pay.

8. Ensure all incidents are managed in a safe and cost-effective manner.

9. Coordinate and provide all wildland fire and prevention information needs to inform internal and external customers with necessary information.

10. Coordinate all fire funding accounts with the Budget Officer to assure Field Office fiscal guidelines are adhered to and targets are met.

11. Approve and sign aviation request forms.

____ ____________________

Manager, Albuquerque Field Office Date

Ref: BLM Standards for Fire and Aviation

6. Pre-Attack Plan, El Malpais NM (in revision)

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APPENDIX F. THEMATIC MAPS

1. Vegetation (in preparation)

2. Wilderness

3. Joint Fire Management Units

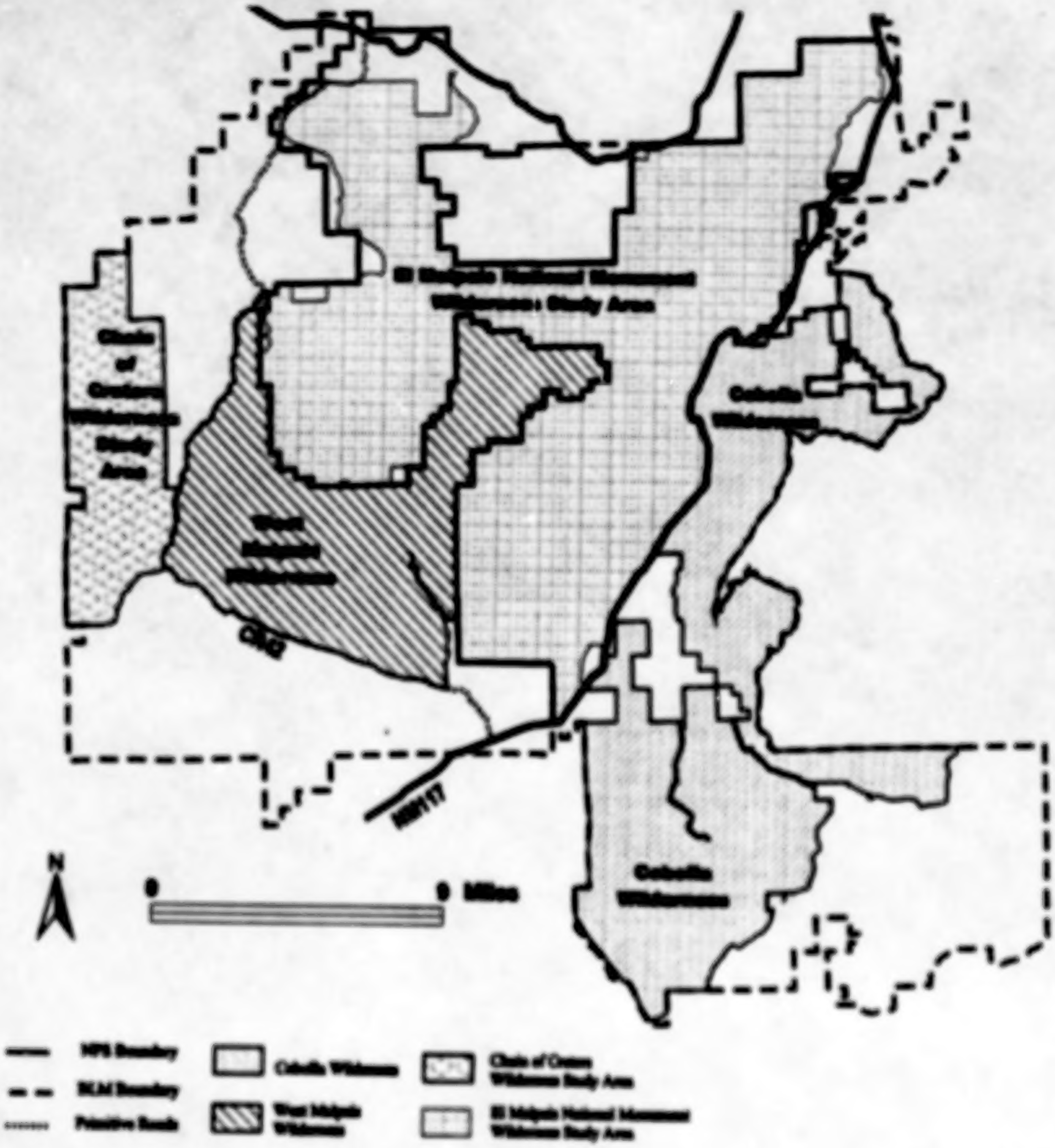
4. Fire Behavior Prediction System (FBPS) Fuel Models

VEGETATION

This Map is in preparation.

Wilderness Areas

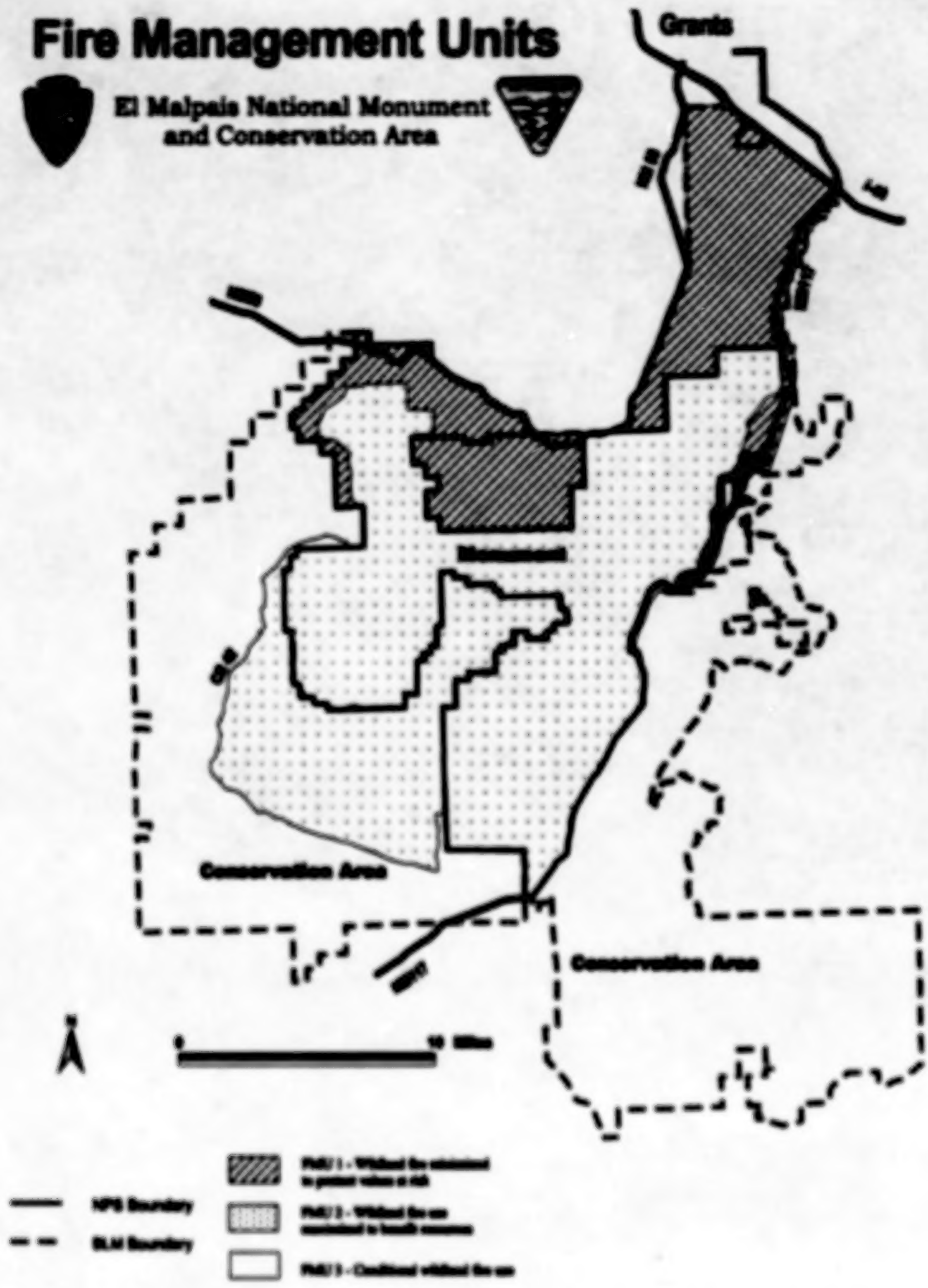
El Malpais National Monument
and Conservation Area



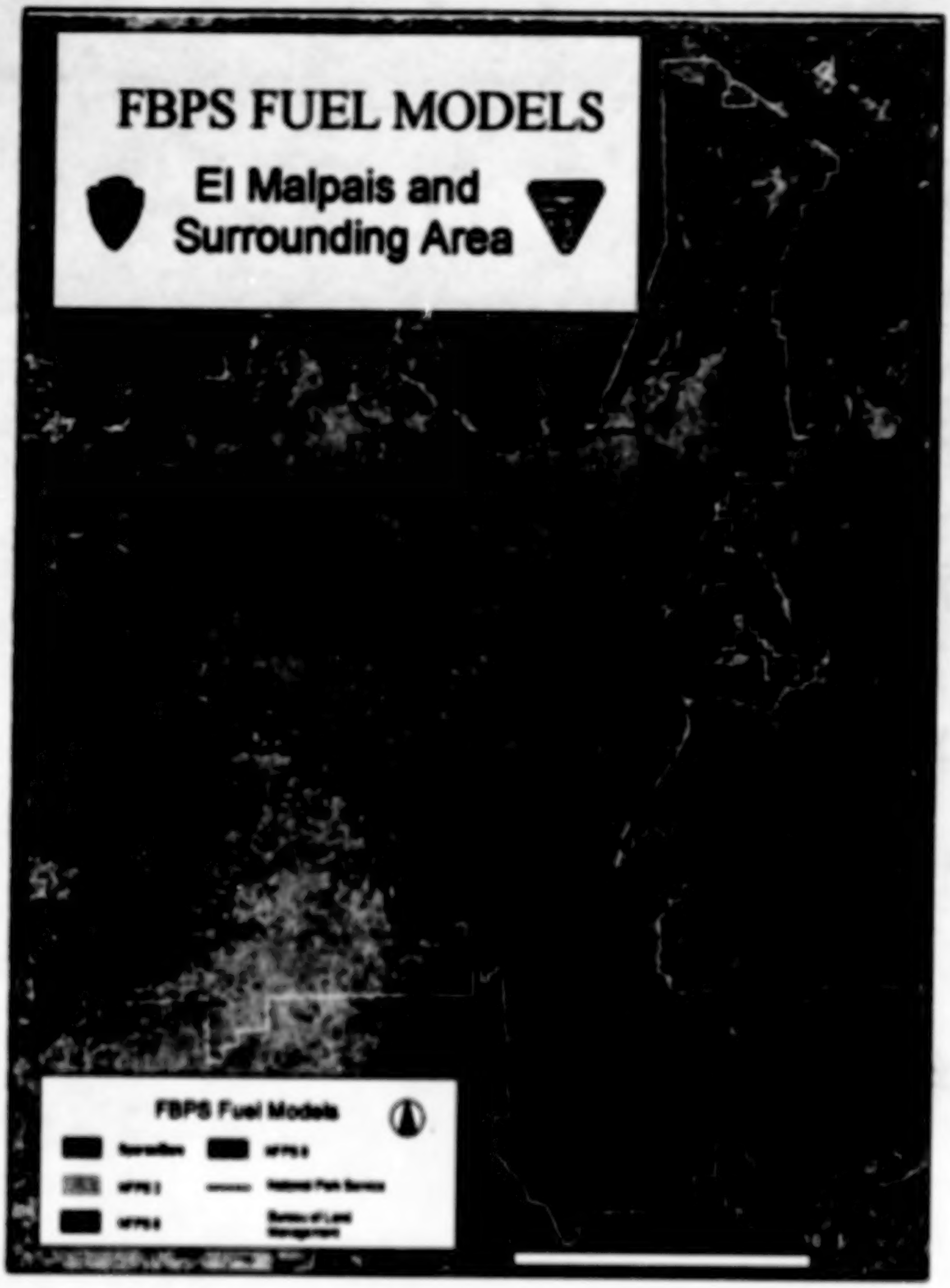
No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

Fire Management Units

**El Malpais National Monument
and Conservation Area**


Grants
Monument
Conservation Area
Conservation Area
0
10 Miles
NPS Boundary
BLM Boundary
FMU 1 - Wildland fire minimized to protect values at risk
FMU 2 - Wildland fire use restricted to benefit resources
FMU 3 - Conditional wildland fire use

No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.



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APPENDIX G. MONITORING PLAN

The following pages contain (FMH-4) sheets for the monitoring types found in El Malpais National Monument.

A full monitoring plan is in preparation.

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MONITORING TYPE DESCRIPTION SHEET (FHM-4)
El Malpais National Monument

Monitoring type: Ponderosa Pine

Monitoring type code: FPIPO1T02

Date Prepared: 8/26/99

Preparers: Schulz, Trader, Anderson

Resource Management Goal: To employ management ignited prescribed fire to reduce hazardous fuel buildups, ensure public safety, protection of property, and resource values; all in a manner that simulates the natural ecosystem function of fire as determined through fire ecology/history research.

Target Conditions: Establish and maintain a vegetative structure and mosaic within the natural range of variability for the southwestern ponderosa pine forest.

Burn Prescription: Fire interval range: 5.7-11.6 yrs. Burns may occur at any time from April through Oct. Heading or backing fires depending on fuel moisture and control needs; fuel moistures: 1-hr 4-8%; 10 hr. 5-9%; 1000 hr. 10-15%; mid-flame windspeed 0-10 mph; average flame length 1-12'; rate of spread 1-140 chains per hour.

Treatment (Fire Management) Objectives:

1. Reduce total fuel load by 40-80% immediate post burn
2. Reduce density of pole trees by 5-250%-within 5 years postburn
3. Reduce density of seedlings by at least 20% within 3 years postburn.

Monitoring Type Variables: Total fuel load, density of all pole trees, density of seedlings.

Additional Treatment (Fire Management) Objectives of Interest:

1. Increase native herbaceous vegetation percent cover by at least 15% within 3 yrs. Postburn
2. No increase in non-native herbaceous vegetation percent cover by 5 years postburn
3. Reduce density of pinon and juniper pole trees where present by at least 30% within 5 years postburn
4. Reduce overstory trees greater than 30.5cm dbh by no more than 20% within 3 years postburn
5. Reduce seedling density by 20-90% within 5 years postburn

Additional Monitoring Type Variables of Interest: Native herbaceous vegetation percent cover, non-native herbaceous vegetation percent cover, overstory tree density by dbh (greater than 30.5 cm dbh), density of pinon-juniper pole trees, seedling tree density,

MONITORING TYPE DESCRIPTION SHEET (FHM-4)
El Malpais National Monument

Monitoring type: pinon-juniper woodlands

Monitoring type code: FJUMO1T06

Date Prepared: 8/26/99

Preparers: Schultz, Trader, Anderson

Resource Management Goal: To employ management ignited prescribed fire to reduce hazardous fuel buildups, ensure public safety, protection of property, and resource values; all in a manner that simulates the natural ecosystem function of fire as determined through fire ecology/history research.

Target Conditions: Establish and maintain a vegetative structure and mosaic within the natural range of variability for the southwestern pinon-juniper woodlands.

Burn Prescription: Burns may occur at anytime from April through October; grasses are nearly or completely cured; heading or backing fires depending on fuel moisture and control needs; fuel moistures: 1-hr 4-8%, 10-hr. 5-10%; 1000-hr. 10-15%; midflame windspeed 0-10 m.p.h; rate of spread 1-140 chains per hour.

Treatment (Fire Management) Objectives:

1. Reduce pinon and juniper pole tree density by 30-70% within 5 years postburn
2. Reduce pinon and juniper seedling tree density by 30-80% within 5 years postburn

Monitoring Type Variables:

1. Pole tree density by species (pinon and juniper)
2. Seedling tree density by species (pinon and juniper)

Additional Treatment (Fire Management) Objectives of Interest:

1. Increase native herbaceous vegetation percent cover by at least 15% within 3 years postburn
2. No increase in non-native herbaceous vegetation percent cover within 3 years postburn
3. No increase in bare ground percent cover within 3 years postburn

Additional Monitoring Type Variables of Interest:

1. Native herbaceous vegetation percent cover
2. Non-native herbaceous vegetation percent cover
3. Bare ground percent cover

Physical Description: This vegetation type typically occurs on south and west facing slopes of cinder cones, in isolated kipukas, ridges on the east side of the monument, and limestone and sandstone ridges on the west side of the monument. Bleakly (1994) notes that in its purest form, PJ "...is best developed on sedimentary substrates; on cinders and other substrates, and ponderosa pine are commonly present."

BIOLOGICAL DESCRIPTION: DOMINATED BY PINON PINE (*PINUS EDULIS*), ROCKY MOUNTAIN JUNIPER (*JUNIPERUS SCOPULORUM*), ONE-SEED JUNIPER (*JUNIPERUS MONOSPERMA*), AND ALLIGATOR JUNIPER (*JUNIPERUS DEPPEANA*). THE COMBINED PJ COVER IS AT LEAST 70% OF ALL TREE COVER. GROUND COVER MAY BE CONTINUOUS WOODY AND HERBACEOUS PLANTS, DEAD AND DOWN FUEL, OR VERY SPARSE GROUND FUELS; PIPO OVERSTORY IS LESS THAN 30%; MAY CONTAIN SCATTERED CLUSTERS OF OAK.

Rejection Criteria: PIPO is >30% of the overstory; bare soil and/or rock >30%. Cave entrances, collapse areas, seeps, large rock outcrops, cultural resources and/or structural archeological sites in plot, areas within 25 meters of maintained roads or trails, areas within 50 meters of burn unit boundaries, canyon walls (slope exceeds 30%), and areas with standing water (10% of edge of plot can be in gullies and/or drainages.

Bibliography: Bleakly, David L. 1994 The Vegetation and flora of El Malpais National Monument. Unpublished report to El Malpais National Monument, Grants, NM. 17 p with 2 (sketch) maps.

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MONITORING TYPE DESCRIPTION SHEET (FHM-4)
El Malpais National Monument

Monitoring type: Grasslands
Monitoring type code: FBOGR1T02 (basalt substrate, west side of park)

Date Prepared: 8/26/99

Preparers: Schultz, Trader, Anderson

Resource Management Goal(s): Restore fire as a keystone natural process. Reduce fine fuels and litter. Reduce shrub % cover. Increase native grass density. Reduce Pinon, Juniper and Ponderosa Pine encroachment.

TARGET CONDITIONS:

Burn Prescription: Burns may occur anytime when grasses are nearly or completely cured; heading or backing fires depending on fuel moisture and control needs; fuel moistures: 1-hr. 4-8%, 10-hr. 6-10%, 1000 hr. 10-20%; midflame windspeed 0-10 m.p.h.; flame length1-12'; rate of spread 1-140 chains per hour.

Treatment (Fire Management) Objectives:

1. Reduce pinon and juniper seedling tree density where present by at least 30% within 5 years postburn
2. Reduce pinon and juniper pole tree density where present by at least 40% within 5 years postburn

Monitoring Type Variables: seedling tree density (pinon & juniper), pole tree density (pinon & juniper)

Additional Objectives of Interest:
1. Increase native perennial grass percent cover by at least 10% within 3 years postburn.
2. No increase in non-native herbacsous vegetation percent cover within 3 years postburn.
3. Reduce brush density by at least 50% within 3 years postburn.
3. No increase in bare ground percent cover within 3 years postburn

Additional Monitoring Type Variables of Interest: native perennial grass percent cover, non-native herbaceous vegetation percent cover, brush density, bare ground percent cover

Physical Description:

1). West side of ELMA:

> West side blue grama grasslands are higher elevation (7000 to 7,600 ft.) and are basalt based soils. Bleakly (1994) notes that this substrate is old and eroded enough to "...have fairly well-developed eolian soils. Alluvium has been deposited adjacent to most of the flows on all sides..." The soil development is at least 8' or greater. Gradient is generally flat. Grasslands have been heavily grazed within the last 100 years though grazing has not been completely eliminated from most of these areas within the last 2 years.

2) East side of ELMA:

Blue grama grasslands on the east side are lower elevation and based on sandstone derived soils. In addition, alluvium has been deposited in these low lying areas which has resulted in deep soils. Similar to the basalt derived soils on the west side of the monument, the gradient is generally flat. Runoff may form temporary lakes next to the lava flows (Bleakly, 1994). Grasslands have been heavily grazed within the last 100 years though grazing has been eliminated from most of these areas within the last 1-3 + years.

Biological Description: These grasslands are typically dominated by blue grama (*Bouteloua gracilis*). Other typical grasses include other gramas, little bluestem (*Schizachyrium scoparium*), three-awn (*Aristida* sp.), squirreltail (*Elymus elymoides*), junegrass (*Koeleria macrantha*), and ring muhly (*Muhlenbergia torreyi*). Common shrubs are rabbitbush (*Chysothamnus nauseosus*), gray horsebrush (*Tetradymia canescens*), sages (*Artemisia* sp.), and broom snakeweed (*Gutierrezia sarothrae*). Oneseed junipers (*Juniperus monosperma*) are occasionally found on outcrops (Bleakly, 1994)

Rejection Criteria: Overstory tree cover > 10%, Pole tree cover >20%; bare soil and rock >30%, cave entrances, collapse areas, seeps, large rock outcrops, cultural resources or structural archeological sites in the plot; areas within 50 meters of the burn unit boundary, areas within 25 meters of a maintained trail or road; canyon walls (slope exceeds 30%); areas with standing water (10% of edge of plot can be in gullies and /or drainages.

Special Notes: These plots are in blue grama grasslands, but they have been set up as forest plots to monitor the area for potential invasion by trees.

Bibliography: Bleakly, David L. 1994? The Vegetation and flora of El Malpais National Monument. Unpublished report (draft?) to El Malpais National Monument, Grants, NM. 17 p with 2 (sketch) maps.

MONITORING TYPE DESCRIPTION SHEET (FHM-4)
El Malpais National Monument

Monitoring type: Grasslands
Monitoring type code: FBOGR2T02 (sandstone substrate, eastside of park)

Date Prepared: 8/26/99

Preparers: Schulz, Trader, Anderson

Resource Managment Goal(s): Restore fire as a keystone natural process. Reduce fine fuels and litter. Reduce shrub % cover. Increase native grass density. Reduce Pinon, Juniper and Ponderosa Pine encroachment

TARGET CONDITIONS:

Burn Prescription: Burns may occur anytime when grasses are nearly or completely cured; heading or backing fires depending on fuel moisture and control needs; fuel moistures: 1-hr. 4-8%, 10-hr. 6-10%, 1000 hr. 10-20%; midflame windspeed 0-10 m.p.h.; flame length1-12'; rate of spread 1-140 chains per hour.

Treatment (Fire Management) Objectives:

1. Reduce brush density by 30-70% within 5 years postburn
2. Increase native perennial grass percent cover by at least 10% within 3 years postburn
3. Reduce pinon and juniper seedling tree density where present by at least 30% within 5 years postburn

Monitoring Type Variables: brush density, native perennial grass percent cover, seedling tree density (pinon & juniper).

Additional Objectives of Interest:

1. Reduce pinon and juniper pole tree density where present by at least 40% within 5 years postburn
2. No increase in non-native herbaceous vegetation percent cover within 5 years postburn
3. No increase in bare ground percent cover within 5 years postburn

Additional Monitoring Type Variables of Interest: pole tree density (pinon & juniper), non-native herbaceous vegetation percent cover, bare ground percent cover

APPENDIX H. JOINT AGENCY PREPAREDNESS/STEP-UP PLAN

JOINT AGENCY STEP-UP PLAN

STAFFING CLASS/ (PLANNING LEVEL)	BURNING INDEX (BI)	ADJECTIVE CLASS/CONDITIONS	MANAGEMENT ACTIONS (Note: unless otherwise indicated, both agencies will follow action items listed)
PL -1	0 – 7	LOW Initiating fires low intensity with low resistance to control; fine fuels drying	•Normal tour of duty 0915 - 1800 •One engine dispatched initial attack response •Phone & radio monitored by ABZ until 1630(or longer if initial attack is extended)
PL-2	8 – 15	MODERATE Initiating fires moderate intensity with low-moderate resistance to control; heavy fuels drying	All above plus: •Daily Roster/staffing reports to ABZ started (NPS)
PL-3	16 – 30	HIGH Initiating fires of moderate to moderate-high intensity with potential for spotting w/winds & passive crowning possible; all fuel classes available at high end BI	All Above Plus: •Consider increased patrols following dry lightning storms; •Predicted LAL between 4 – 6, bump up to LEVEL IV
PL-4	31 – 40	VERY HIGH Fires present moderate to high intensity and high resistance to control; escapes are common at high end BI; all fuels classes available for rapid combustion; air temps high, humidities low with high winds possible; spotting & intermittent crowning likely	All Above Plus: •ABZ staffed until 2400 hrs. or longer as needed; •Two-engine initial attack response plus back-up as required under severity funding; •Briefings for Agency Administrators as needed; •Advise ABZ if extended staffing hours required; •(NPS)Consider park fire restrictions; fire safety messages distributed •Consider cancelling planned prescribed-fires and postponing project work •Consider Appropriate Response actions as full suppression •Emergency Presuppression accounts open & authorized for use
PL-5	41 +	EXTREME High to extreme intensities with crowning, short-long range spotting common; project fires likely under high wind conditions	All Above Plus: •(NPS)Consider ordered-standby/cancel lieudays •Consider daily Briefings for AA's and press releases issued regularly •Review AA Briefing package

Based on the NFDRS Weather Station data[13]

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[13] Actions based on predicted fire weather before 1400 hr (MST) and on actual weather after 1400 hr. Based on 10 years' data from Station #293301 (Malpais RAWS). Analysis used NFDRS Model C, Slope Class 1 (0-25%), perennial herbs, and Climate Class of 1 (semi-arid).

APPENDIX I. PRESCRIBED FIRE

1. Prescriptions—NPS El Malpais National Monument
2. Prescribed Fire Burn Blocks for the El Malpais Conservation Area (BLM)—(Narrative)
3. Five-Year Prescribed Fire Map—El Malpais National Monument

1. PRESCRIPTIONS

(FOR WILDLAND FIRE USE FOR RESOURCE BENEFIT ONLY)

(REF: Fire Management Plan, El Malpais NM 1992)

PRESCRIPTION VARIABLE	RANGE - ALL ELEVATIONS & EXPOSURES	
FBPS FUEL MODELS 2,9	*NFDRS FUEL MODEL C*	
	SPRING	**FALL**
WIND SPEED (MPH - EYE LEVEL)/DIRECTION	**0 - 12/ANY**	**0 - 15/ANY**
AIR TEMPERATURE (°F.)	**35 - 85**	**30 - 85**
RELATIVE HUMIDITY (%)	**15 - 40**	**15 - 40**
1 - HR. TLFM (%)	**4 - 8**	**3 - 8**
10 - HR. TLFM (%)	**5 - 10**	**4 - 10**
LIVE FUEL MOISTURE (%)	**90 - 200**	**90 - 200**

2. PRESCRIBED FIRE BURN BLOCKS FOR THE EL MALPAIS CONSERVATION AREA (NCA)

Prepared: June 2000
(Note: The following is excerpted & paraphrased from the original document, on file Albuquerque Field Office)

This document is a brief outline of potential burn blocks within the NCA. The blocks are named, given rough boundaries and acre estimates. The burn blocks are categorized by the BLM grazing allotment in which they lie. The potential burns listed below are only those that were observed during field visits between June 17 - 30, 2000. There are no doubt other places within the NCA which fire can be used as a tool to restore or promote ecological health.

CERRO and CERRO CHATO

All the burn blocks listed for this allotment have sufficient fuel to burn as of July 1, 2000. All could be burned in either fall or spring. The introductory fire into this area can be under a moderate/hot prescription. Tree spacing, size, and understory fuel loadings are not extreme in these stands. A more extensive fuel loading inventory will be needed to confirm this. Needle litter is the primary carrier of fire for these burns. The areas do not appear to receive much grazing pressure. A preburn grazing deferment is probably not necessary. Grazing patterns in this area will become more apparent by October. A resource specialist would need to assess the need of post burn grazing deferments. All targeted acres with the exception of parts of the Cerro Negro burn are within the Chain of Craters WSA. Access is good. There are a number of water pipeline roads in the area.

1. Cerro Negro burn.

Approximately 1,720 acres (BLM except 160 acres private uncontrolled); ponderosa pine; dirt roads surround the project area.

2. Cerro Lobo burn.

Approximately 5,120 acres (BLM); same fuels as above, with roads and p-j stands define boundaries; more suitable for aerial ignition.

3. Cerro Quemado burn.

Approximately 9,000 acres, combination of the two burns listed above plus additional acres; ponderosa pine, aerial ignition.

4. Rocky Rendija burn.

Approximately 7,000 acres, all public land. Objective to reduce or eliminate p-j encroachment; area breaks down to 3 separate burn blocks.

YORK RANCH

Within the NCA, the York Ranch is the largest grazing allotment. All burns listed are on east side. Tree density (generally p-j) has increased, with rabbitbrush the more common invader species in canyon bottoms. The majority of acres within the 3 burn areas are in the Cebolla Wilderness. All burns are best suited for May and/or June to ensure maximum kill or the woody species and improved grass recovery.

1. Sandy Bowl burn.

Approximately 3.500 acres, all public land. Burn is within the far north pasture of the York Ranch, within natural boundaries. A control line is required along the pasture fence from highway 117 to the bluffs of Cebollite Mesa to secure the south boundary. Target is large grassy bowl near the center. There are also areas of ponderosa pine to understory burn. Keep burn out of the recreation site just south of the narrows. Ground ignition.

2. North Pasture burn.

Approximately 5,120 acres, all public land. Burn has solid boundaries on the west (highway 117) and east; north and south boundaries are along the fenceline. Only half the acres in this block will be impacted by fire. Objective to reduce woody species invasion and maintain open grassland.

3. Wolf Onion burn.

Approximately 7,000 acres, all public lands. Only half the block will carry fire.

CERRO BRILLANTE

All except one burn block within this allotment would need grazing deferments to ensure adequate fuels to carry. Resource objectives are control p-j encroachment onto the grasslands and to reduce density in the woodlands. Should be burned at hot & dry end of prescription, May or June. Postburn growing season grazing deferments will be necessary.

1. Cerro Brillante burn.

Approximately 4,480 acres, all public lands. With a grazing deferment, could be treated one year following. There are two roads which could be used as control lines for the north and east sides. The east road is the York Ranch, west and south control lines follow fences. Aerial or hand ignition or combination is recommended.

2. Old Homey burn.

Approximately 3,520 acres, all public land. Ranch headquarters need to be protected; burn can be broken into 4 blocks using old roads as definition. Over half the burn is in the Chain of Craters WSA.

3. Monte Saco burn.

Approximately 8,320 acres are within the allowable. There are 600 acres of private land owned by permittee in the burn area. Majority of burn is grasslands, with an abundance of small (< 2 ft.) trees moving out of the woodlands and onto the plains. Old roads define sub-blocks, with the west side of burn along the Ramah Navajo Reservation. Possible opportunity exists to conduct joint burn with tribe. Would need to thin around the ponderosa pine trees on Monte Saco to ensure their survival.

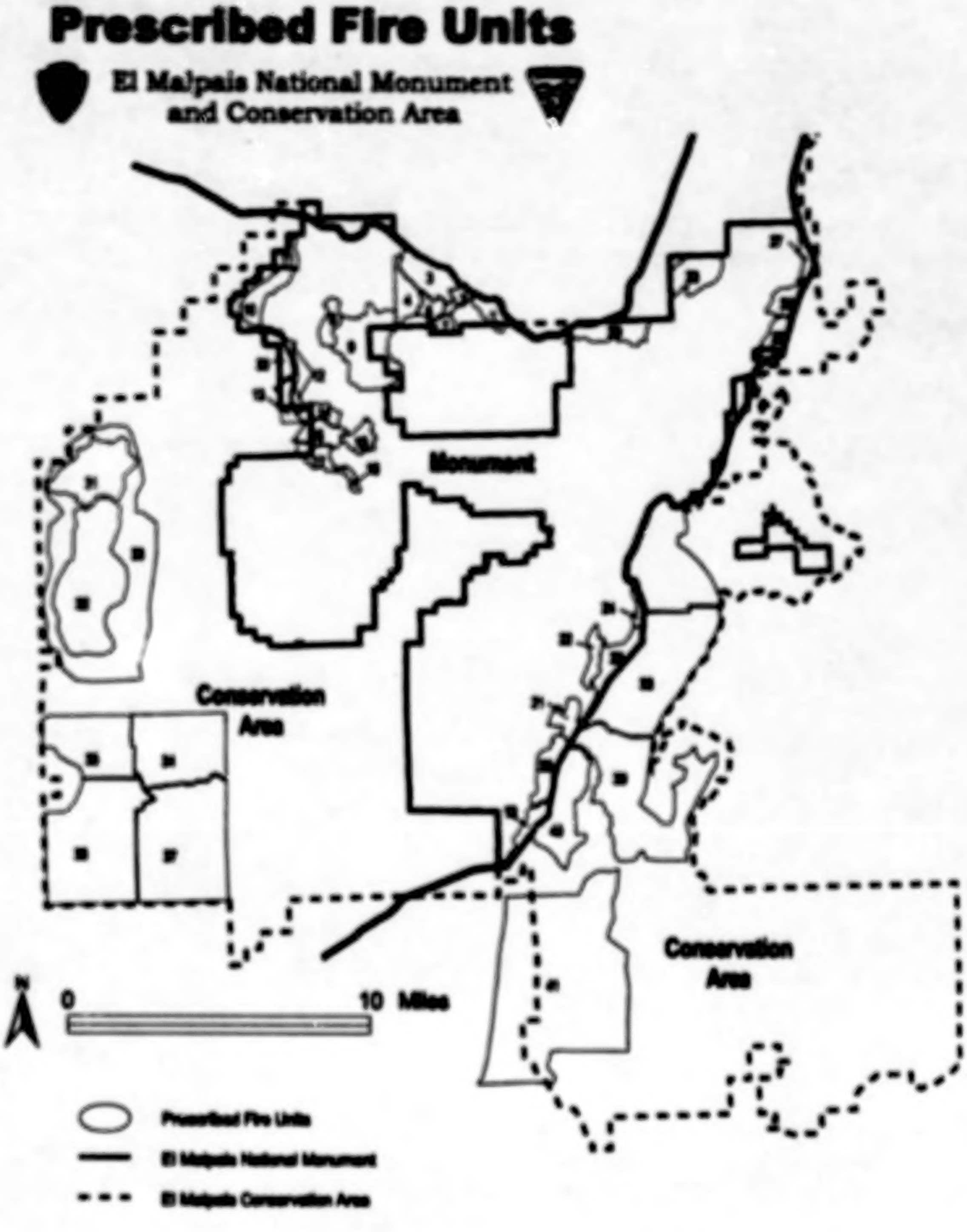
4. Ripper burn.

Approximately 2,400 acres, all public land. Boundaries are highway 117 on the west, a rocky mesa on the east and either old roads or burnt-in lines on north and south. Significant p-j encroachment with good grass cover to carry fire exists now.

5. Mucho Canyons burn.

Approximately 13,000 acres, all except 40 acres of public land. Burn boundaries are the fence lines of one large pasture. The western third of the burn area is on open grasslands. Sides of mesas are natural fuel breaks. Objective is to maintain the open drainage bottoms, reduce woodland densities (mesa tops) and the understory burn the ponderosa pine to maintain stands.

3. Five-Year Prescribed Fire Map—El Malpais National Monument



No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

APPENDIX J. WILDLAND FIRE ASSESSMENT, IMPLEMENTATION AND DOCUMENTATION

1. Joint Wildland Fire Use Decision Matrix
2. Wildland Fire Implementation Plan and Documentation (Sections I - VII)

JOINT WILDLAND FIRE USE DECISION MATRIX

- IS THE FIRE HUMAN CAUSED?

NO

YES - APPROPRIATE MANAGEMENT RESPONSE (AMR)

↓

- IS THE FIRE IN FMU-2 (WEST MALPAIS WILDERNESS, HOYA FLOW OR EASTSIDE MCCARTY FLOW)?

YES

NO - AMR

↓

- IS THE FIRE AN IMMEDIATE THREAT TO PRIVATE LAND OR WITHIN FMU-1?

NO

YES - AMR

↓

- IS THE ENERGY RELEASE COMPONENT (ERC) FROM THE MALPAIS LAVA FLOW WEATHER STATION (#293301) FOR FBPS FUEL MODEL 7C2P2 >24?

NO

YES - AMR

↓

- ARE THERE MORE THAN 5 WILDLAND FIRES BURNING WITHIN FMU-2 OR FMU-3 THAT REQUIRE ACTIVE MONITORING OR MANAGEMENT?

NO - MONITOR (BLM)
INITIATE WFIP (NPS)

YES - AMR

Wildland Fire Implementation Plan

Fire Name	
Fire Number	

Documentation Product	**Product Needed**	**Product Completed**
NPS WFIP - Stage I: Initial Fire Assessment		
*Fire Situation**	☐	☐
Initial GO/NO-GO Decision*	☐	☐
WFIP - Stage II: Short-Term Implementation Actions		
Short-Term Fire Behavior Predictions And Risk Assessment	☐	☐
Short-term Implementation Actions	☐	☐
Complexity Analysis	☐	☐
Stage III Need Assessment Chart	☐	☐
WFIP - Stage III: Long-Term Implementation Actions	☐	☐
Periodic Fire Assessment		
Part 1, Re-validation*	☐	☐
Part 2, Stage III Need Assessment	☐	☐
Wildland Fire Situation Analysis*	☐	☐

***DOCUMENTS THAT BLM WILL ALSO COMPLETE**

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FIRE SITUATION *(BLM & NPS AGENCY USE)*

Fire Name	
Fire Number	
Jurisidiction(s)	
Administrative Unit(s) ***FMU (2 OR 3)***	
Geographic Area	
Management Code	
Start Date/Time	
Discovery Date/Time	
Current Date/Time	
Current Size	
Location: **Legal Description(s)**	**T.** **R.** **Sec.** **Sub.**
Latitude	
Longitude	
UTM:	
County:	
Local Description	
Cause	

Fuel Model/ Conditions	
Weather: **Current**	
Predicted	
Fire Behavior: **Current**	
Predicted	
Availability of Resources	

DECISION CRITERIA CHECKLIST *(NPS/BLM USE)*

Decision Element	Yes	No
Is there a threat to life, property, or resources that cannot be mitigated?		
Are potential effects on cultural and natural resources outside the range of acceptable effects?		
Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator?		
Is there other proximate fire activity that limits or precludes successful management of this fire?		
Are there other Agency Administrator issues that preclude wildland fire use (*ALLOW FIRE TO ACHIEVE RESOURCE OBJECTIVES*)?		

The Decision Criteria Checklist is a process to assess whether or not the situation warrants continued wildland fire use implementation. A "Yes" response to any element on the checklist indicates that the appropriate management response should be suppression-oriented.

Recommended Response Action **(check appropriate box)**	**NO-GO** **(Initial attack/suppression action)**	
	GO **(Other appropriate management response)**	

Signature ______________________________ **Date** ______________

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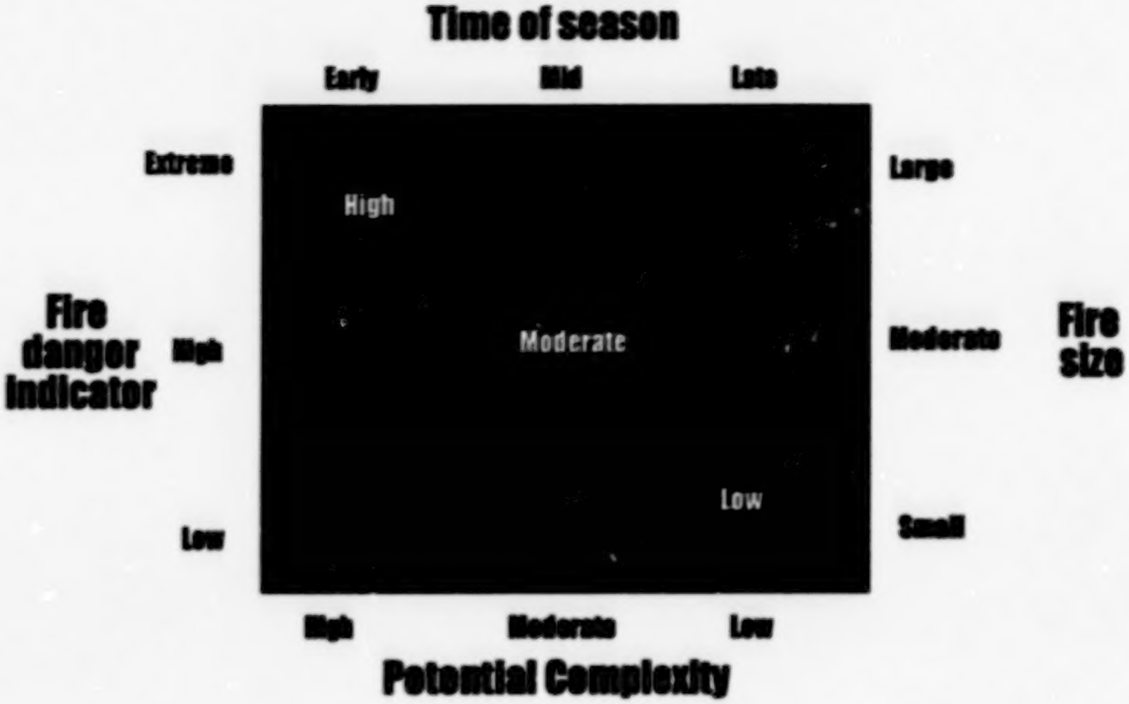
Wildland Fire Relative Risk Rating



Determination of Relative Risk Rating for Wildland Fires. To obtain relative risk, connect lines between the top and bottom variables and the left and right hand variables. Where these lines cross represents the relative risk for this specific fire.

SHORT-TERM IMPLEMENTATION ACTION

**(BLM USE WFSA TO DOCUMENT APPROPRIATE MANAGEMENT RESPONSE ACTIONS)*

Attach Stage I information.

Action Items	**Information specific to this fire**
Objectives and Desired Effects	
Safety Considerations	
External Concerns	
Environmental Concerns	

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Threats	
Short-Term Actions (describe)	
Estimated Costs	
Signature	
Title/date	

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET

***(BLM OPTIONAL)**

Complexity element	*Weighting factor*	*Complexity value*	*Total points*
Safety	5		
Threats to boundaries	5		
Fuels and fire behavior	5		
Objectives	4		
Management organization	4		
Improvements	3		
Natural, cultural, social values	3		
Air quality values	3		
Logistics	3		
Political concerns	2		
Tactical operations	2		
Interagency coordination	1		

Total complexity points ☐

Complexity Rating (circle) L M H

Complexity Value Breakpoints:	
Low	*40 - 90*
Moderate	***91 - 140***
High	**141 - 200**

The Wildland and Prescribed Fire Complexity Analysis provides a method to assess the complexity of both wildland and prescribed fires. The analysis incorporates an assigned numeric rating complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied times the numeric rating value to provide a value for that item. Then all values are added to generate the total complexity value. Breakpoint values are provided for low, moderate, and high complexity values.

The complexity analysis worksheet is accompanied by a guide to numeric values for each complexity element shown, provided on the following pages.

Wildland and Prescribed Fire Complexity Rating Worksheet Numeric Rating Guide

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	3	5
Safety	Safety issues are easily identifiable and mitigated	• Number of significant issues have been identified • All safety hazards have been identified on the LCES worksheet and mitigated	• SOF1 or SOF2 required • Complex safety issues exist
Threats to Boundaries **other than NPS/BLM*	• Low threat to boundaries • POI<50% • Boundaries naturally defensible	• Moderate threat to boundaries • 50<POI<70% • Moderate risk of slopover or spot fires • Boundaries need mitigation actions for support to strengthen fuel breaks, lines, etc.	• High threat to boundaries • POI>70% • High risk of slopover or spot fires • Mitigation actions necessary to compensate for continuous fuels
Fuels/Fire Behavior	• Low variability in slope & aspect • Weather uniform and predictable • Surface fuels (grass, needles) only • Grass/shrub, or early seral forest communities • Short duration fire • No drought indicated	• Moderate variability in slope & aspect • Weather variable but predictable • Ladder fuels and torching • Fuel types/loads variable • Dense, tall shrub or mid-seral forest communities • Moderate duration fire • Drought index indicates normal conditions to moderate drought; expected to worsen	• High variability in slope & aspect • Weather variable and difficult to predict • Extreme fire behavior • Fuel types/loads highly variable • Late seral forest communities or long-return interval fire regimes • Altered fire regime, hazardous fuel /stand density conditions • Potentially long duration fire • Drought index indicates severe drought; expected to continue

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	3	5
Objectives	• Maintenance objectives • Prescriptions broad • Easily achieved objectives	• Restoration objectives • Reduction of both live and dead fuels • Moderate to substantial changes in two or more strata of vegetation • Objectives judged to be moderately hard to achieve • Objectives may require moderately intense fire behavior	• Restoration objectives in altered fuel situations • Precise treatment of fuels and multiple ecological objectives • Major change in the structure of 2 or more vegetative strata • Conflicts between objectives and constraints • Requires a high intensity fire or a combination of fire intensities that is difficult to achieve
Management Organization	• Span of control held to 3 • Single resource incident or project	• Span of control held to 4 • Multiple resource incident or project • Short-term commitment of specialized resources	• Span of control greater than 4 • Multiple branch, divisions or groups • Specialized resources needed to accomplish objectives • Organized management team (FUMT, IMT)
Improvements to be Protected	• No risk to people or property within or adjacent to fire • *No risk to permittee values (BLM)*	• *Permittee* values to be protected (BLM) • Mitigation through planning and/or preparations is adequate • May require some commitment of specialized resources	• *Many Permittee values to be protected (BLM)* • Severe damage likely without significant commitment of specialized resources with appropriate skill levels
Natural, Cultural, and Social Values to be Protected	• No risk to natural, cultural, and/or social resources within or adjacent to fire	• *Wilderness/cultural Values to be protected (RA input required) &* Mitigation through planning and/or preparations is adequate • May require some commitment of specialized resources	• *Wilderness/cultural Values to be protected with holding actions;* Severe damage likely without significant commitment of specialized resources with appropriate skill levels

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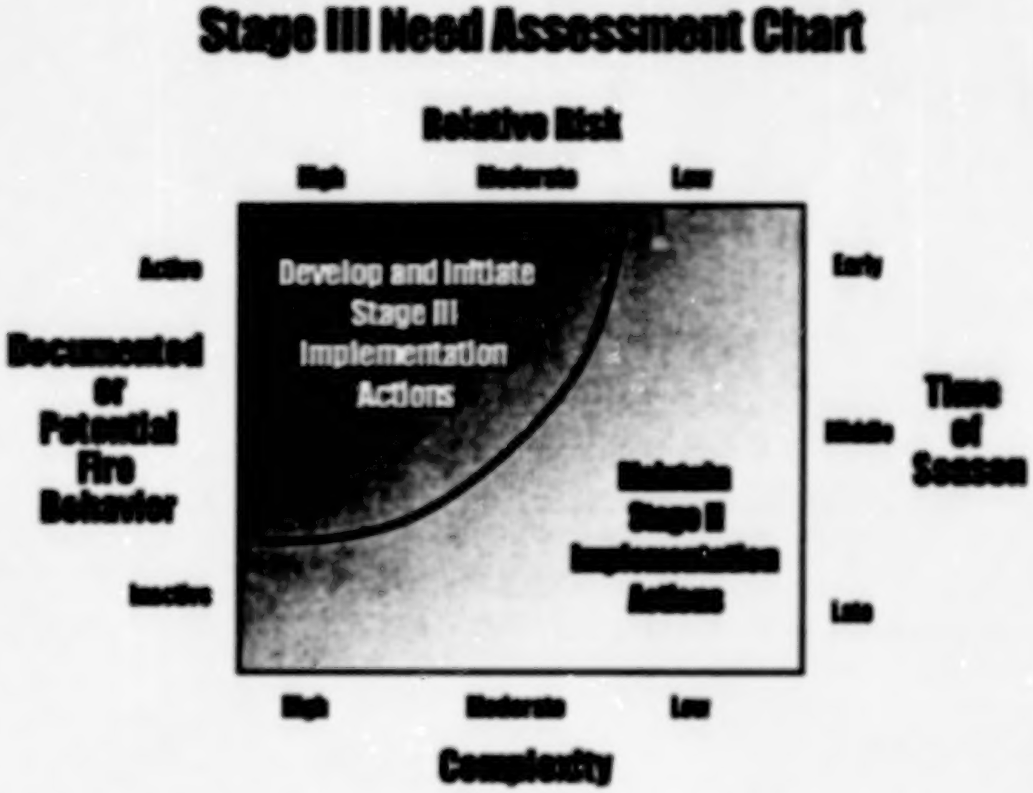
COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	3	5
Air Quality Values to be Protected	• Few smoke sensitive areas near fire • Smoke produced for less than 1 burning period • Air quality agencies generally require only initial notification and/or permitting • No potential for scheduling conflicts with cooperators	• Multiple smoke sensitive areas, but smoke impact mitigated in plan • Smoke produced for 2-4 burning periods • Daily burning bans are sometimes enacted during the burn season • Infrequent consultation with air quality agencies is needed • Low potential for scheduling conflicts with cooperators	• Multiple smoke sensitive areas with complex mitigation actions required • Health or visibility complaints likely • Smoke produced for greater than 4 burning periods • Multi-day burning bans are often enacted during the burn season • Smoke sensitive class 1 airsheds • Violation of state and federal health standards possible • Frequent consultation with air quality agencies is needed • High potential for scheduling conflicts with cooperators
Logistics	• Easy access • Duration of fire support is less than 4 days	• Difficult access • Duration of fire support between 4 and 10 days • Logistical position assigned • Anticipated difficulty in obtaining resources	• No vehicle access • Duration of support is greater than 10 days • Multiple logistical positions assigned • Remote camps and support necessary
Political Concerns	• No impact on neighbors or visitors • No controversy • No media interest	• Some impact on neighbors or visitors • Some controversy, but mitigated • Press release issued, but no media activity during operations	• High impact on neighbors or visitors • High internal or external interest and concern • Media present during operations

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	3	5
Tactical Operations	• No ignition or simple ignition patterns • Single ignition method used • Holding requirements minimal	• Multiple firing methods and/or sequences • Use of specialized ignition methods (i.e. terra-torch, Premo Mark III) • Resources required for up to one week • Holding actions to check, direct, or delay fire spread • *BLM lands: fire approaching maximum in FMU-2 of 2,000 acres or allowable area boundary or NPS MMA*	• Complex firing patterns highly dependent upon local conditions • Simultaneous use of multiple firing methods and/or sequences • Simultaneous ground and aerial ignition • Use of heli-torch • Resources required for over 1 week • *BLM fire approaching allowable area boundary or NPS MMA* • Aerial support for mitigation actions desirable/necessary
Interagency Coordination	• Cooperators not involved in operations • No concerns	• Simple joint-jurisdiction fires(*NPS - BLM*) • Some competition for resources • Some concerns	• Complex multi-jurisdictional fires (*EXCEEDS NPS-BLM JUDRISDICTION)* • High competition for resources • High concerns

Stage III Need Assessment Chart



To obtain the need indication, connect the top and bottom variables with a single line and then connect the left and right variables with a single line. Where the line crosses indicates the need for WFIP Stage III. The appropriate need is read directly off the chart.

Stage III: Long-Term Implementation Actions

Attach Stage I and Stage II information. Update and/or revise Stage I and II as necessary.

Objectives and Risk Assessment Considerations

Natural and Cultural Resource Objectives and Constraints/ Considerations

Maximum Manageable Area (MMA)

Acres in MMA:

Attach Map of MMA

Fire Projections, Weather, and Map

Projected Fire Area Under *Expected* Weather Conditions	**For date:** **Area:**
Projected Fire Area Under Experienced *Severe* Weather Conditions	**For date:** **Area:**

Weather Season/Drought: Discussion and Prognosis

Long-Term Risk Assessment and Map (If applicable)

Risk Assessment (Describe techniques utilized and outputs, include maps as appropriate)

Probability of Success

Describe Probability of Success

Threats

Threats to MMA	
Threats to Public Use and Firefighter Safety	
Smoke Dispersion and Effects	
Other	

Monitoring Actions

Describe Monitoring Actions, Frequency, Duration

Holding Actions

Describe Holding Actions, Management Action Points that initiate these actions, and Key to Map if necessary

REVIEW COPY

Resources Needed to Manage the Fire

Describe resources necessary to accomplish ignition, holding, and monitoring actions

Estimated Costs of Managing the Fire

Describes costs in terms of resources needed, projected duration, etc.

Contingency Actions

Describe Contingency actions, management action points that initiate them, resources needed, etc.

Information Plan

Describe Information Plan, Contacts, Responsibilities, etc.

Post-burn Evaluation

Describe post-burn evaluation procedures, resource requirements, costs, duration, etc.

Signatures

Include signatures/titles/dates for preparing, approving, and any concurring individuals

PERIODIC FIRE ASSESSMENT, INSTRUCTIONS

(BLM & NPS)

The Periodic Fire Assessment is a process to prevent the unchecked escalation of an individual fire situation or the total fire management situation without evaluation and adequate planning. Part 1 evaluates the capability to continue implementation of the appropriate management response to this fire for achieving resource benefits for a specified period following the assessment i.e., the next 24 hour period or longer, depending upon fire weather and fire behavior forecasts or other anticipated conditions. This assessment will be completed and periodically reviewed for validity. The "assessment frequency" box on page 1 specifies the frequency of assessing the particular fire. Assessment frequencies will be set by the local unit but are recommended to range from every day to every ten (10) days depending on the fuel type and geographic location of the fire. Recommendations for minimum assessment frequency include the following: Grass fuel types = daily; shrub and timber fuel types = every 1 – 5 days; Alaska = every 1 – 10 days.

The "valid date(s)' box is inclusive of those dates where the assessment remains valid, as indicated by the dated signature. When any decision elements change from "No" to "Yes", a new checklist must be completed for documentation purposes. A "Yes" response to any element on the Part 1checklist indicates that the selected appropriate management response is not accomplishing or will not accomplish desired objectives and that a new strategic alternative should be developed immediately through the use of a Wildland Fire Situation Analysis (WFSA).

The Periodic Fire Assessment, Part 2 is a process that must be completed periodically for all wildland fires managed for resource benefits that do not have a completed WFIP Stage III. For isolated ignitions in fuel-limited situations, Part 2 does not have to be completed. When completing Part 2 of this checklist, if the chart indicates that WFIP Stage III is needed, it must be prepared within 24 hours.

When units establish monitoring and assessment frequency, it may be appropriate to develop a "step-up" system based on fire size or levels of fire activity. Then, as an individual fire gets larger or becomes more active, the monitoring and assessment frequency can correspondingly increase. Conversely, as fire activity lessens and fire size increases become less common, monitoring and assessment can "step-down" and become less frequent. Units must identify standards and rationale for establishing assessment frequency, especially "step-up" and "step-down" actions. If fire size is used as a determinant, then past burning rates should be used to formulate standards. If fire activity is used, then levels of burning (acres per day, etc.) must be definable and justifiable.

The Agency Administrator or delegated individual must sign the Signature Page on the specified assessment frequency.

PERIODIC FIRE ASSESSMENT

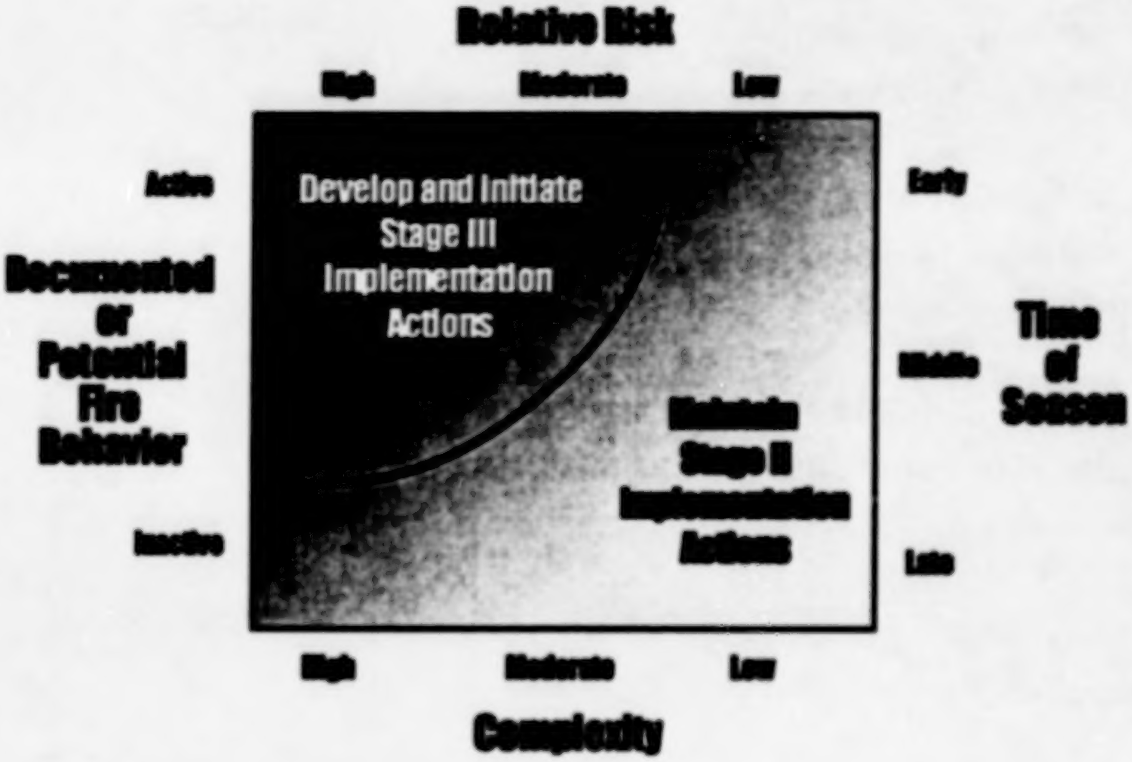
PART 1: RE-VALIDATION CHECKLIST

Decision Element	Yes	No
Is there a threat to life, property, or resources that cannot be mitigated?		
Are potential effects on cultural and natural resources (INCLUDING WILDERNESS) outside the range of acceptable effects?		
Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator?		
Is there other proximate fire activity that limits or precludes successful management of this fire?		
Are there other Agency Administrator issues that preclude wildland fire use?		
Do expected management needs for this fire exceed known capabilities?		

PERIODIC FIRE ASSESSMENT

- **PART 2: STAGE III NEED ASSESSMENT CHART**

Stage III Need Assessment Chart


Relative Risk
High
Moderate
Low
Active
Documented or Potential Fire Behavior
Inactive
Early
Middle
Late
Time of Season
Develop and Initiate Stage III Implementation Actions
Maintain Stage II Implementation Actions
High
Moderate
Low
Complexity

PERIODIC FIRE ASSESSMENT

SIGNATURE TABLE FOR NPS

		Fire can continue to be managed for resource benefits (wildland fire use action).	**Fire can continue to be managed under the short-term implementation Action.**
Assessment Frequency			
Valid Date(s)			
Name/Title	**Date**	**Y/N**	**Y/N/NA**

REVIEW COPY

WILDLAND FIRE SITUATION ANALYSIS

Wildland Fire Situation Analysis (WFSA) is a decision-making process in which the Agency Administrator or representative describes the situation, establishes objectives and constraints for the management of the fire, compares multiple strategic wildland fire management alternatives, evaluates the expected effects of the alternatives, selects the preferred alternative, and documents the decision. The format and level of detail required is dependent on the specific incident and it's complexity. The key is to document the decision.

WFSA INITIATION

FIRE NAME	
JURISDICTION(S)	
DATE AND TIME INITIATED	

WFSA COMPLETION/FINAL REVIEW

THE SELECTED ALTERNATIVE ACHIEVED DESIRED OBJECTIVES ON (DATE/TIME):	
THE SELECTED ALTERNATIVE DID NOT ACHIEVE THE DESIRED OBJECTIVES AND A NEW WFSA WAS PREPARED ON (DATE/TIME):	
AGENCY ADMINISTRATOR OR REPRESENTATIVE SIGNATURE:	

WFSA INSTRUCTIONS

Section I. WFSA Information Page

The Agency Administrator completes this page.

I.A. Jurisdiction(s): Assign the agency that have or could have fire protection responsibility, e.g., USFWS, Forest Service, BLM, etc.

I.B. Geographic Area: Assign the recognized "Geographic Coordination Area" in which the fire is located, e.g., Northwest, Northern Rockies, etc.

I.C. Unit: Designate the local administrative unit, e.g., Hart Mountain Refuge Area, Flathead Indian Reservation, etc.

I.D. WFSA #: Identify the number assigned to the most recent WFSA for this fire.

I.E. Fire Name: Self-explanatory.

I.F. Incident Number: Identify the agency number assigned to the fire, e.g., BOD 296, BNF 001.

I.G. Accounting Code: Insert the local unit's accounting code.

I.H. Date/Time Prepared: Self-explanatory.

I.I. Attachments: Check here to designate attachments used in the completion of the WFSA. "Other" could include data or models used in the development of the WFSA. Briefly describe the "other" items used.

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I. WILDLAND FIRE SITUATION ANALYSIS

A. JURISDICTION(S):	**B. GEOGRAPHIC AREA:**
C. UNIT(S):	**D. WFSA #:**
E. FIRE NAME:	**F. INCIDENT #:**
G. ACCOUNTING CODE:	
H. DATE/TIME PREPARED:	

I. ATTACHMENTS:

☐ **COMPLEXITY MATRIX/ANALYSIS[1]**
☐ **RISK ASSESSMENT[1]**

☐ ***PROBABILITY OF SUCCESS[1]***
☐ **CONSEQUENCES OF FAILURE[1]**
☐ **MAPS[1]**
☐ **DECISION TREE[2]**
☐ **FIRE BEHAVIOR PROJECTIONS[1]**
☐ **CALCULATIONS OF RESOURCE REQUIREMENTS[1]**
☐ **OTHER (SPECIFY)**

[1] Required

[2] Required by the USFS

Section II. Objectives and Constraints

The Agency Administrator completes this page.

II.A. Objectives: Specify criteria that should be considered in the development of alternatives.

Safety objectives for firefighters, aviation, and public must receive the highest priority. Suppression objectives must relate to resource management objectives in the unit resource management plan.

Economic objectives could include closure of all portions of an area, thus impacting the public, or impacts to transportation, communication and resource values.

Environmental objectives will include wilderness where applicable, and could include management objectives for airshed, water quality, wildlife, etc.

Social objectives could include any local attitudes toward fire or smoke that might affect decisions on the fire, safety, etc.

Other objectives might include legal or administrative constraints which would have to be considered in the analysis of the fire situation, such as the need to keep the fire off other agency lands, etc.

II.B. CONSTRAINTS: LIST CONSTRAINTS ON WILDLAND FIRE ACTION. THESE COULD INCLUDE CONSTRAINTS TO DESIGNATED WILDERNESS, WILDERNESS STUDY AREAS, ENVIRONMENTALLY OR CULTURALLY SENSITIVE AREAS, IRREPARABLE DAMAGE TO RESOURCES OR SMOKE MANAGEMENT/AIR QUALITY CONCERNS. ECONOMIC CONSTRAINTS SUCH AS PUBLIC AND AGENCY COST COULD BE CONSIDERED HERE.

II. OBJECTIVES AND CONSTRAINTS

A. OBJECTIVES (must be specific and measurable):

1. SAFETY:

Public

Firefighter

2. ECONOMIC:

3. ENVIRONMENTAL:

4. SOCIAL:

5. OTHER:

B. CONSTRAINTS:

(REF: Joint Fire Management Plan, Section 7.2)

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Section III. Alternatives

The FIRE MANAGER/and or INCIDENT COMMANDER complete(s) this page.

III.A. Wildland Fire Management Strategy: Briefly describe the general wildland fire strategies for each alternative. Alternatives must meet resource management plan objectives.

III.B. Narrative: Briefly describe each alternative with geographic names, locations, etc., that would be used when implementing a wildland fire strategy. For example, "Contain within the Starvation Meadows' watershed by the first burning period".

III.C. Resources Needed: Resources listed must be reasonable to accomplish the tasks described in Section III.B. It is critical to also look at the reality of the availability of these needed resources.

III.D. Estimated Final Fire Size: Estimated final size for each alternative at time of containment.

III.E. Estimated Contain/Control Date: Estimates for each alternative shall be made based on predicted weather, fire behavior, resource availability and the effects of wildland fire management efforts.

III.F. Cost: Estimate all fire costs for each alternative. Consider mopup, rehabilitation, and other costs as necessary.

III.G. Risk Assessment: Probability of success/Consequences of failure: Describe probability as a % and associated consequences for success and failure. Develop this information from models, practical experience or other acceptable means. Consequences described will include fire size, days to contain, days to control, costs and other information such as park closures and effect on critical habitat. Include fire behavior and long-term fire weather forecasts to derive this information.

III.H. Complexity: Assign the complexity rating calculated in the Guide for Assessing Fire Complexity.

III.I. Maps: A map for each alternative must be prepared. The map shall be based on the "Probability of success/Consequences of Failure" and include other relative information.

III. ALTERNATIVES

	A	*B*	*C*
A. WILDLAND FIRE STRATEGY:			
B. NARRATIVE:			
C. RESOURCES NEEDED:			
HANDCREWS			
ENGINES			
DOZERS			
AIRTANKERS			
HELICOPTERS			
D. ESTIMATED FINAL FIRE SIZE:			
E. ESTIMATED CONTAIN/ CONTROL DATE			
F. COSTS:			
G. RISK ASSESSMENT: PROBABILITY OF SUCCESS/ CONSEQUENCES OF FAILURE			
H. COMPLEXITY:			
I. ATTACH MAPS FOR EACH ALTERNATIVE			

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Section IV. Evaluation of Alternatives

The Agency Administrator(s), FPM and/or Incident Commander(s) completes this page.

IV.A. Evaluation Process: Conduct an analysis for each element of each objective and each alternative. Objective shall match those identified in section II.A. Use the best estimates available and quantify whenever possible. Provide ratings for each alternative and corresponding objective element. Fire effects may be negative, cause no change or may be positive. Examples are: 1) a system which employs a "-" for negative effect, a "0" for no change, and a "+" for positive effect; 2) a system which uses a numeric factor for importance of the consideration (soils, watershed, political, etc.) and assigns values (such as -1 to +1, -100 to +100, etc.) to each consideration, then arrives at a weighted average. If you have the ability to estimate dollar amounts for natural resource and cultural values this data is preferred. Use those methods which are most useful to managers and most appropriate for the situation and agency. To be able to evaluate positive fire effects, the area must be included in the resource management plan and be consistent with prescriptions and objectives of the Fire Management Plan.

Sum *Of* Economic Values: Calculate for each element the net effect of the rating system used for each alternative. This could include the balance of: pluses (+) and minuses (-), rumerical rating (-3 and +3), or natural and cultural resource values in dollar amounts. (Again resource benefits may be used as part *of* the analysis process when the wildland fire is within a prescription consistent with approved Fire Management Plans and in support *of* the unit's Resource Management Plan.)

EVALUATION OF ALTERNATIVES

A. EVALUATION PROCESS	*A*	*B*	*C*
SAFETY			
Firefighter			
Aviation			
Public			
ECONOMIC			
Forage			
Improvements			
Recreation			
Timber			
Water			
Wilderness			
Wildlife			
Other (specify)			
ENVIRONMENTAL			
Air			
Visual			
Fuels			
T & E Species			
WILDERNESS			
SOCIAL			
Employment			
Public Concern			
Cultural			
Other (Specify)			
OTHER			

Section V. Analysis Summary

The Agency Administrator(s), FPM and/or Incident Commander complete this page.

V.A. Compliance with Objectives: Prepare narratives that summarize each alternative's effectiveness in meeting each objective. Alternatives that do not comply with objectives are not acceptable. Narratives could be based on effectiveness and efficiency. For example: "most effective and least efficient", "least effective and most efficient", "or "effective and efficient". Or answers could be based on a two-tiered rating system such as "complies with objective" and "fully complies with or exceeds objective". Use a system that best fits the manager's needs.

V.B. Pertinent Data: Data for this section has already been presented and is duplicated here to help the Agency Administrator(s) confirm their selection of an alternative. Final Fire Size is displayed on page three, section III.D. Complexity is calculated in the attachments and displayed on page three, section III.H. Costs are displayed on page three, section III.F. Economic Values have been calculated and displayed on page four. Probability of Success/Consequences of Failure are calculated in the attachments and displayed on page three, section III.G.

V.C. External and Internal Influences: Assign information and data occurring at the time the WFSA is signed. Identify the Preparedness Index (1 through 5) for the National and Geographic levels. If available, indicate the Incident Priority assigned by the MAC group. Designate the Resource Availability status. This information is available at the Geographic Coordination Center and needed to select a viable alternative. Designate "yes" indicating an up-to-date weather forecast has been provided to, and used by, the Agency Administrator(s) to evaluate each alternative. Assign information to the "other" category as needed by the Agency Administrator(s).

Section VI. Decision

Identify the alternative selected. Must have clear and concise rationale for the decision, and a signature with date and time. Agency Administrator(s) signature is mandatory.

V. ANALYSIS SUMMARY

ALTERNATIVES	*A*	*B*	*C*
A. COMPLIANCE WITH OBJECTIVES: *SAFETY* ***ECONOMIC*** ***ENVIRONMENTAL*** ***SOCIAL*** ***OTHER***			
B. PERTINENT DATA:			
FINAL FIRE SIZE			
COMPLEXITY			
COST			
RESOURCE VALUES			
PROBABILITY of SUCCESS			
CONSEQUENCES of FAILURE			

C. EXTERNAL/INTERNAL INFLUENCES:

NATIONAL AND GEOGRAPHIC PREPAREDNESS LEVEL ____________________

INCIDENT PRIORITY ____________________

RESOURCE AVAILABILITY ____________________

WEATHER FORECAST (LONG-RANGE) ____________________

FIRE BEHAVIOR PROJECTIONS

VI. DECISION

The selected alternative is:

RATIONALE:

AGENCY ADMINISTRATOR SIGNATURE ____________________

DATE/TIME ____________________

Section VII. Daily Review

The Agency Administrator(s), or designate complete(s) this page.

The date, time and signature of reviewing officials are reported in each column for each day of the incident. The status of Preparedness Level, Incident Priority, Resource Availability, Weather Forecast, and WFSA Validity is completed for each day reviewed. Ratings for the Preparedness Level, Incident Priority, Resource Availability, Fire Behavior, and Weather Forecast are addressed on page five, section V.C. Assign a "yes" under "WFSA Valid" to continue use of this WFSA. A "no" indicates this WFSA is no longer valid and another WFSA must be prepared or the original revised.

VII. PERIODIC REVIEW

SELECTED ALTERNATIVE TO BE REVIEWED DAILY TO DETERMINE IF STILL VALID UNTIL CONTAINMENT OR CONTROL

[redacted]		BY	PREPAREDNESS LEVEL	INCIDENT PRIORITY	RESOURCE AVAILABILITY	WEATHER FORECAST	FIRE BEHAVIOR PROJECTIONS	WFSA VALID

IF WFSA IS NO LONGER VALID, A NEW WFSA WILL BE COMPLETED

A GUIDE FOR ASSESSING FIRE COMPLEXITY

(BLM REF. TO STANDARDS FOR FIRE & AVIATION, CH. 10 FOR "EXTENDED ATTACK COMPLEXITY ANALYSIS")

The following questions are presented as a guide to assist the Agency Administrator and staff in analyzing the complexity or predicted complexity of a fire situation. Because of the time required to assemble or move an Incident Management Team to a fire, this checklist should be completed when a fire escapes initial attack and be kept as part of the fire records. This document is prepared concurrently with the preparation of and attached to a new or revised Wildland Fire Situation Analysis. It must be emphasized that this analysis should, where possible, be based on predications to allow adequate time for assembling and transporting the ordered resources.

Use of the Guide:

1. **Analyze each element and check the response yes or no.**

2. **If positive responses exceed, or are equal to, negative responses within any primary factor (A through G), the primary factor should be considered as a positive response.**

3. **If any three of the primary factors (A through G) are positive response, this indicates the fire situation is or is predicted to be Type I.**

4. **Factor H should be considered after all above steps. If more than two of these i there are fewer than three positive responses in the primary factors (A-G) a Type II team should be considered. If the answers to all questions in H are negative, it may be advisable to allow the existing overhead to continue action on the Fire.**

GLOSSARY OF TERMS

Potential for blow-up conditions - Any combination of fuels, weather and topography excessively endangering personnel.

Threatened and endangered species - Threat to habitat of such species, or in the case of flora, threat to the species itself.

Smoke Management - Any situation which creates a significant public response, such as smoke in a metropolitan area or visual pollution in high-use scenic areas.

Extended exposure to unusually hazardous line conditions - Extended burnout or backfire situations, rock slides, cliffs extremely steep terrain, abnormal fuel situations such as frost killed foliage, etc.

Disputed Fire Management responsibility - Any wildland fire where responsibility for management If not agreed upon due to lack of agreements or different interpretations, etc.

Disputed fire policy - Differing fire policies between suppression agencies when the fire involves multiple ownership is an example.

Pre-existing controversies - These may or may not be fire management related. Any controversy drawing public attention to an area may present unusual problems to the fire overhead and local management.

Have overhead overextended themselves mentally or physically -
This is a critical item that requires judgment by the responsible agency. It is difficult to write guidelines for this judgment because of the wide differences between individuals. If, however, the Agency Administrator feels the existing overhead cannot continue to function efficiently and take safe and aggressive action due to mental or physical reasons, assistance is mandatory.

FIRE COMPLEXITY ANALYSIS

	Yes/No
A. FIRE BEHAVIOR: Observed or Predicted	
1. Burning Index (from on-site measurement of weather conditions). Predicted to be above the 90% level using the major fuel model in which the fire is burning (*REF: JOINT STEP-UP PLAN, APPENDIX H*)	___ ___
2. Potential exists for "blowup" conditions (fuel moisture, winds, etc).	___ ___
3. Crowning, profuse or long-range spotting.	___ ___
4. Weather forecast indicating no significant relief or worsening conditions (*ATTACH FORECASTS*)	___ ___
Total	___ ___
B. RESOURCES COMMITTED:	
1. 200 or more personnel assigned.	___ ___
2. Three or more divisions.	___ ___
3. Wide variety of special support personnel.	___ ___
4. Substantial air operation which is not properly staffed.	___ ___
5. Majority of initial attack resources committed.	___ ___
Total	___ ___
C. RESOURCES THREATENED:	
1. Urban interface.	___ ___
2. Developments and facilities.	___ ___
3. Restricted, threatened or endangered species habitat.	___ ___
4. Cultural sites.	___ ___
5. Unique natural resources, special designation zones or wilderness.	___ ___
6. *ICE CAVES, KIPUKAS, LAVA TUBES.*	___ ___
Total	___ ___
D. SAFETY:	
1. Unusually hazardous fire line conditions/*HAZARDOUS TRAVEL OVER LAVA FLOW*	___ ___
	___ ___
2. Serious accidents or fatalities.	___ ___
3. Threat to safety of visitors from fire and related operations.	___ ___
4. Restrictions and/or closures in effect or being considered.	___ ___
5. No night operations in place for safety reasons.	___ ___
Total	

E. OWNERSHIP: Yes/No

1. Fire burning or threatening more than one jurisdiction. ___ ___
2. Potential for claims (damages). ___ ___
3. Different or conflicting management objectives. ___ ___
4. Dispute over fire management responsibility. ___ ___
5. Potential for unified command. ___ ___

Total . . . . ___ ___

F. EXTERNAL INFLUENCES:

1. Controversial wildland fire management policy. ___ ___
2. Pre-existing controversies/relationships. ___ ___
3. Sensitive media relationships. ___ ___
4. Smoke management problems. ___ ___
5. Sensitive political interests. ___ ___
6. Other external influences. ___ ___

Total . . . . ___ ___

G. CHANGE IN STRATEGY

1. Change in strategy (from lower to higher intensity management). ___ ___
2. Large amounts of unburned fuel within planned perimeter. ___ ___
3. WFSA invalid or requires updating. ___ ___

Total . . . . ___ ___

H. EXISTING OVERHEAD:

1. Worked two operational periods without achieving initial objectives. ___ ___
2. Existing management organization ineffective. ___ ___
3. Overhead/IMT overextended mentally and/or physically. ___ ___
4. Incident actions plans, briefings, etc., missing or poorly prepared. ___ ___

Total . . . . ___ ___

Signature	
Date	**Time**

APPENDIX K. PREVENTION PLAN

FIRE PREVENTION PLAN

El Malpais National Monument

El Malpais identifies the following parkwide actions, risks, hazards and values for fire prevention. The prevention plan includes major elements and public use areas and is not intended to be all inclusive, however it does pertain to the entire Monument.

Actions for implementation

- Appropriate and applicable fire safety signs will be posted on park bulletin boards; entrance signs and visitor use areas and at each information center.
  Responsible persons: Facility Manager, Supervisory Forestry Technician, Chief of Visitor Services

- Fire prevention messages will be included in park publications such as site bulletins, camping and hiking permits, information request packets and educational kits.
  Responsible person: Chief of Visitor Services

- Appropriate fire safety messages will be included in all interpretive programs. When possible, programs at local schools will emphasize fire's natural role in the ecosystem and the prevention of human caused wildland fires.
  Responsible persons: Chief of Visitor Services, Supervisory Forestry Technician

- Fire safety messages will be provided when Backcountry Permits, or any Special Use Permit, are issued.
  Responsible persons: Protection Rangers, Chief of Visitor Services

- During extended periods of Very High to Extreme fire danger, press releases will be prepared that advise of the conditions, possible restrictions, and prevention measures. When possible, press releases will be coordinated with adjacent land management agencies.
  Responsible persons: Chief of Visitor Services, Chief Ranger

- All park employees that will, or may, be in the field will complete the Introduction to Wildfire Prevention training course.
  Responsible person: Supervisory Forestry Technician

- During the fire season, the daily fire danger rating (Staffing Class) and any RED FLAG Alerts will be broadcast over the park's radio system. The Grants BLM office and Ranger Station will also be notified.
  Responsible person: Administrative Clerk/Dispatcher, Supervisory Forestry Technician

- Prevention patrols will be conducted to contact visitors regarding fire safety and to ensure compliance with restrictions and regulations.
  Responsible persons: Protection Rangers, Fire Engine Crew, Interpretive Rangers

- During Very High to Extreme fire danger, emergency restrictions and/or closures will be established by the Superintendent. These measures will be implemented in addition to standard park fire regulations. When possible, these restrictions will be coordinated with adjacent land management agencies.
  Responsible persons: Chief Ranger, Superintendent

- Annual fire safety inspections will be conducted at all government owned structures and facilities.
  Responsible person: Park Safety Officer

- All overhead power lines will be checked for tree clearance and possible flame reach distances.
  Responsible person: Supervisory Forestry Technician, Fire Engine Crew

FIRE PREVENTION ZONE RATINGS/ACTIONS

Zone 1 - Bandera Crater Area

Risk = High

Numerous privately owned lands with seasonal or permanent residences and a heavily used privately owned recreation facility. National Park Service housing, Information Center and Fire Cache. This area receives moderate to heavy visitor use. NM State Hwy 53 borders the northern part and bisects this zone. Overhead utility power lines.

Hazard = High

Mixed conifer overstory with continuous fine fuels of grass and pine litter. Dense regeneration thickets and concentrations of down and dead fuels creating potential fire ladders.

Values = High

Privately owned lands with seasonal or permanent residences and a privately owned recreation facility. NPS developed and occupied structures and facilities.

Specific Prevention Actions

- Contact private landowners/residents and discuss fire prevention/safety. Offer to make assessments and recommendations.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

- Conduct cyclic management ignited prescribed fires and/or mechanical thinning to prevent high intensity catastrophic fires.
  - **Responsible persons: Chief Ranger, Supervisory Forestry Technician**

- Obviously post Fire Danger current level on a sign along the hwy.
  Responsible persons: Supervisory Forestry Technician, Fire Engine Crew

ZONE 2 – EL CALDERON AREA

Risk = High

Moderate to heavy visitor use area including picnicking, vault public restroom, hiking, caving, biking, and backcountry camping. Adjacent private lands with residences, and access to other private land. NM State Hwy 53 borders the northern area. Overhead power lines traverse the area to adjacent private land.

Hazard = High

Mixed conifer overstory with continuous fine fuels of grass and pine litter. Dense regeration thickets and concentrations of dead and down fuels creating potential fire ladders. Public picnicking area with barbeque grills. The area has been treated with prescribed fire in the past and is approaching an RX fire re-entry cycle.

Value = Medium

Visitor use facilities include a gravel parking lot, vault restroom, picnic tables and barbeque grills, bulletin board and hiking/biking trails. Private residences are located within one-half to one mile of the park boundary.

Specific Prevention Actions

- Schedule regular patrols to reduce unauthorized camping and open fires
  Responsible persons: Protection Rangers, Fire Engine Crew, Interpretive Rangers, Maintenance Staff

- Conduct cyclic management ignited prescribed fires and/or mechanical thinning to prevent high intensity catastrophic wildland fires.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

Zone 3 – Zuni-Acoma Trailhead

Risk = High

Receives moderate to high visitor use. Backcountry hiking trailhead. Picnic area and a public vault restroom. Adjacent private land with seasonal residence. NM State Hwy 53 borders the northern area.

Hazard = Medium

Open grassland with Pinyon-Juniper. Fairly continuous fine fuels of grass

Value = Medium

Paved parking lot. Picnic table. Public vault restroom. Bulletin board and wayside exhibits. A private seasonal use residence is located within one-half mile of this area.

Specific Prevention Actions

- Increase fire safety/education, non-personal, efforts in this area.
  Responsible persons: Chief of Visitor Services, Supervisory Forestry Technician

- Conduct cyclic management ignited prescribed fires and/or mechanical treatments to prevent undesirable wildland fires.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

Zone 4 – NW New Mexico Visitor Center

Risk = High

Multi-million dollar multi-agency structure with paved access road and parking lot. Located at the southeast edge of Grants City limits, just off Interstate 40 Exit 89. Visitor use is moderate, but expected to increase to high. Adjacent private land and businesses.

Hazard = Medium

Continuous fine fuels of primarily grassland with some small woody brush.

Value = High

Multi-million dollar structure with paved access road and parking lot. Natural and decorative landscaping. Adjacent private lands and businesses. Interstate Highway traffic.

Specific Prevention Actions

- Schedule periodic patrols of the area to ensure there are no fire source activities.
  Responsible persons: NWNMVC Supervisor, Protection Rangers

- Display current fire danger advisories within the public information area.
- **Responsible Persons: Supervisory Forestry Technician, NWNMVC Supervisor**

- Conduct management ignited prescribed fires and/or mechanical treatments to manage fuel loads and reduce wildland fire potential.
  Responsible Persons: Chief Ranger, Supervisory Forestry Technician

Zone 5 – Acoma-Zuni Trailhead

Risk = High

Receives moderate visitor use and serves as a day use hiking trailhead. Some picnicking and primitive camping. NM Hwy 117 borders. Adjacent Acoma Tribal lands. Traditional native american cultural uses of the area. Unknown number of archeological sites.

Hazard = Low

Open pinyon-juniper woodland with scattered grass and srubs.

Value = Medium

Gravel parking lot with wooden walk-thru gate. Information bulletin board. Adjacent Acoma Tribal grazing.

Specific Prevention Actions

- Post No Fires signs
  Responsible persons: Chief Ranger, Facility Manger

- Conduct patrols to ensure fire restriction compliance

Responsible persons: Protection Rangers, Interpretive Rangers, Seasonal Fire Crew

Zone 6 – Sandstone Bluffs Area

Risk = High
A heavily used scenic overlook and picnic area with a vault restroom, bulletin board and wayside exhibit. The area is within 15 miles of Grants on good roads, and is typically accessible 24 hours a day. The area is historically known as a late night party area for local teenagers. The BLM Ranger Station is within one mile of the entrance road. Adjacent lands are private, BLM and Acoma Tribal. NM Hwy 117 is the eastern boundary of this area. Numerous archeological sites; several historic stone walled buildings; overhead utility power lines.

Hazard = Medium

Open pinyon-juniper with grass and shrubs. Soils are very sandy and the area has been, until recently, heavily grazed.

Value = Medium

Gravel entrance road and parking area. Picnic tables, vault restroom, bulletin board, wayside exhibit. Cultural resource sites and traditional use area. Adjacent BLM Ranger Station, private and Acoma Tribal lands. Utility power lines.

Specific Prevention Actions

- Schedule extended period patrols to prevent unauthorized activities.
  Responsible persons: Chief Ranger, Protection Rangers

- Post No Open Fires signs and monitor use of picnic barbeque grills.
  Responsible persons: Facility Manager, Maintenance staff, Protection Rangers

- Conduct cyclic mangement ignited prescribed fires and/or mechanical thinning to prevent high intensity wildland fires.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

Zone 7 – Lava Falls Area

Risk = Medium
Light to moderate visitor use. Gravel entrance road and parking area. Bulletin board. Day use hiking trailhead. Adjacent BLM Wilderness lands. NM Hwy 117 is the eastern boundary.

Hazard = Medium

Open pinyon-juniper with grassland and some shrub for the most part. There are sizable pockets of fairly thick P-J with some accumulations of dead and down. The area had been extensively grazed, but is recovering.

Value = Low

No development or improvements other than the entrance road and parking lot. One bulletin board. Adjacent BLM Wilderness experiences seasonal hunting and grazing.

Specific Prevention Actions

- Post applicable fire restriction signage.
  Responsible persons: Facility Manager, Supervisory Forestry Technician

- Conduct cyclic management ignited prescribed fires and/or mechanical thinning to prevent high intensity wildland fires.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

Zone 8 – Big Tubes Area/Little Hole in the Wall

Risk = Medium

Moderate to high seasonal visitor use. Picnic area with vault restroom. Bulletin board and wayside exhibit. Adjacent private inholdings with no development on some and several seasonal cabins (4), and BLM lands used for grazing. Some primitive backcountry camping. Some areas out on the lava are producing information from ancient trees. A limited number of cultural sites is known.

Hazard = Medium

Ponderosa pine, pinyon-juniper with grass and shrubs. Some areas are dense thickets, and there are areas of heavy dead and down left from logging periods. Other areas are mixed conifer overstory with grass and pine litter. The picnic area has barbeque grills available. The entire area has, and still is, experiencing trespass grazing.

Value = Medium

Picnic and restroom facilities, bulletin board and wayside exhibit. Private lands, some with seasonal cabins of questionable condition, others are occupied seasonally. All private structures are more than one-half mile outside the monument boundary.

Specific Prevention Actions

- Post applicable fire restriction signage
  Responsible persons: Facility Manager, Supervisory Forestry Technician

- Conduct patrols to ensure fire restriction compliance and provide fire education.
  Responsible persons: Protection Rangers, Seasonal Fire Crew, Interpretive Rangers

- Conduct cyclic management ignited prescribed fires and/or mechanical thinning to prevent high intensity wildland fires.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician, Seasonal fire crew

Zone 9 – The Remaining Areas of the Monument

Risk = Low
Typically receives very light to almost no backcountry use. Some trespass grazing occurs in the west Cerritos de Jaspe area. Most of this zone is located out on the various age lava flows bordered primarily by BLM wilderness, and BLM grazing allottments. Private adjacent lands are buffered by rough lava flows and are very limited in development structures. There are no NPS improvements or structures. This entire area is NPS Wilderness Study Area. Cultural sites are minimal and typically consist of dry laid lava walls. Nearly all of the known caves/lava tubes are in this zone.

Hazard = Medium
A variety of mixed conifer, pinyon-juniper, grass and some shrub. There are sections of heavy dead and down fuels left from logging or natural causes, and also the suppression of wildland fires. This zone can be considered nearly high hazard to firefighters safety due to the extremely rough topography/geology. Accessibility is extremely limited.

Value = Low
Non-existent facilities or other improvements. Adjacent BLM grazing allottments.

Specific Prevention actions

- Continue with current parkwide fire prevention education.
  Responsible persons: Chief of Visitor Services, Supervisory Forestry Technician

- Improve posting of fire restrictions at typical entry points.

Responsible persons: Supervisory Forestry Technican, Facility Manager

- Continue, and increase patrols of use/access areas particularly during higher fire danger periods to detect unauthorized activities and provide education.
  Responsible persons: Protection Rangers, Seasonal fire crew

- Conduct management ignited prescribed fires and/or mechanical treatments, implement Wildland Fire Use for Resource Benefits and/or Appropriate Mangement Response as applicable.
  Responsible persons: Chief Ranger, Supervisory Forestry Technician

APPENDIX L. COMPENDIUM OF CHANGES

Changes in policy or directives will be added to this appendix as they occur.

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ALBUQUERQUE ZONE DISPATCH

STANDARD OPERATING PROCEDURES

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GENERAL INFORMATION

Telephones

1. **Albuquerque Zone phone numbers:**

   Dispatch - local numbers: (505) 346-3910
   Out of Area - toll free number: 1-888-971-0100

2. **To answer the phones** - Pick up the receiver and answer using: Example: "Albuquerque Zone, *your name*". The phones will be answered before three rings.

3. **To Make a Phone Call.**

   A. **Local** - Lift the receiver, that will select a open line. Then dial 9 and your number.

   B. **Long Distance** - Lift the receiver, dial 9 + 1, then the area code and the number.

   C. **Speed dial** - Lift the receiver, press **Autodial** button enter "0" plus the redial number. List of autodial numbers is located at each of the radio consoles. Example: autodial 011.

   D. **Speaker phone** - Select a line without lifting the receiver, then dial as above.

   E. **Transfer calls** - Hit transfer button, ext #, then hang up. Extension numbers are located in each of the console phone directories.

Fax Machine is located in Dispatch on the west side of partition. The number is **(505) 346-3911**. There is a FAX directory with all the Forest Service FAX numbers in the nation kept in bookshelf at east wall. The instruction book for the FAX machine is also located there.

Copy Machine - A small copier is located on the gray file cabinet by thee East wall. A larger copy machine is located across the hall in the Mail room for double-sided copies.

Radios - Detailed operating instructions for the "Avtec" radios are located in this binder in the "Radio Instructions" section. This book is located in the book case on the east wall.

Agreements/Operating Plans - Operating plans for dispatch are in this binder kept in the bookcase located on the east wall. Other agreements, MOU's and Operating Plans are also in the bookcase on the East wall. Questions, ask one of the zone dispatchers.

GENERAL BUILDING INFORMATION

Security Alarm - Is located on the wall as you enter the building through the employees entrance. It must be "set" if you are leaving for the day AND are the last person leaving the building. Before setting the alarm, walk through the building to check that no one is in the building, announce over the paging system that dispatch is closing, if anyone is left in the building they should contact dispatch. turn off the lights and "set" the alarm. To set the alarm, (with a steady green light) press **1 6 1 6**. You will hear a tone and have a steady red light. With the door locked, you can leave.

Disabling the Alarm - You can turn off the alarm by pressing **1 6 1 6**. The red light will change to green, then the alarm is off.

Central Alarm Security - Phone number is **883-4242** Password: **WOODSY.**

Restrooms - They are located down the hall from dispatch. As you leave dispatch, make two right hand turns, then one left turn. The restrooms will be on your left. The water fountain will be between the two restrooms.

Employee Lounge - is located down the hall from Dispatch. As you leave Dispatch, make two right turns, the lounge will be on your left. There are candy, soda, coffee machines and microwave there.

Coffee - is available in Dispatch. Make sure you make it if you are the first one in and, make sure it is OFF, if you are the last one to leave.

OPENING DISPATCH

Telephones are forwarded to the answering service at the close of business.

To cancel call forwarding;

1. **Cancel Call Forwarding** by selecting the **the red button on the center dispatch console telephone. Then** Dial *11. **This MUST be done from this telephone** ONLY.

2. **Check for Messages** by dialing **9-256-5859.** When the answering service answers, identify yourself as Albuquerque Zone and ask if there are any messages. Write them down on a phone message slip.

3. **Go into Service**. Using one of the consoles select the simul-select button on the radio screen and select CIF ADM-MOSCA, ABD-ALBUQ, SPA-ABQ, N6S-NM ST. and announce that Albuquerque Zone Dispatch is now in service.

4. **Tape Recorder (Logger)**

A. First thing in the morning, when opening the office: Press the **STOP** button. When the light stops flashing, press eject and take the tape and rewind it on the tape rewinder machine located on the credenza by the east wall.

B. When the tape is rewound, remove the "Used" tape and place that tape in the case marked with "yesterdays" date on it. Tapes are stored in the "wall locker".

C. Get a "new" tape with "todays" date on it and erase it on the bulk tape eraser. The eraser is located on the the credenza next to the rewinder. Follow the instructions on the tape eraser.

D. Load the "new" erased tape with todays date on the case, close the door and press the **RECORD** and the **PLAY** button at the same time. The instruction book with complete directions is kept on the radio console under the logger.

CLOSE OF BUSINESS

Prior to closing the office, there are a number of procedures that need to be completed.

1. If an incident is 100 acres or more a "Daily Situation Report (209)" needs to be completed. The IC will have to turn this in to ABZ. ABZ will in turn mail it to SWCC. If the incident is unable to complete the 209 form they may call in the information to ABZ, the coordinator on duty will complete. See page ???? for more information.

2. Turn off the coffee pot. Get it ready for the following morning.

3. **See that the back and warehouse doors are closed and locked.**

4. Take all stations off line on all three screens. Using one of the consoles select the simul-select button on the radio screen and select CIF ADM-MOSCA, ABD-ALBUQ, SPA-ABQ, N6S-NM ST. and announce that Albuquerque Zone Dispatch is going out of service.

5. **Forward** the 346-3910 line (red button) to the answering service. **You MUST do this from the center dispatch position phone ONLY.** Select the phone line, dial ***10**, then **9** then **256-5859**, the answering service answers, advise the Service that the office is closing and advise them who is on call. When phone beeps, phones are forwarded. Hang up and dial **9-346-3910**, as a follow-up to make sure phones are forwarded.

6. **Set the alarm ONLY after you are certain YOU are the last person to leave the building. Announce over the paging system that dispatch is closing, if anyone is left in the building they should contact dispatch.**

7. **Setting the alarm: With a steady green light on the alarm pad, enter 1 6 1 6, the light will change to a steady red light, then leave the building.**

DAILY OPERATIONS

Staffing

1. Units will call or fax with the staffing by 0900. Generally, this is who is on duty today, with their location.

Example: Mt. Taylor Ranger District: 2-3 on, 2-3-1 day off, E 2-1 on with 3
Kessler + 2, available in the Zuni Mountains.

2. Fill out the "ABZ daily staffing" sheet, and place on the map behind the dispatchers.

3. Place the magnetic buttons with the radio call numbers on them, at the resources reported locations on the dispatch map. This is to identify which will be the closest forces. An ETA back to station is also required.

4. At the close of business everyone must be accounted for. If any resource that is out in the field has not checked in by their ETA. Try contacting by radio, phone, etc. If no contact is made,. call supervisor.

INTELLIGENCE

Introduction

Fire intelligence describes incident specifics with appropriate technical detail. This allows agency managers to have a good understanding of the situation and enough information to make a decisions necessary. Formal fire intelligence flows through the incident support channels.

Information gathered from the field, by dispatch, is used by the managers, SWCC, NICC, other dispatch , the National Weather Service, Public Affairs and the firefighting units.

This information becomes more critical in Preparedness Levels III, IV, and V. when there are shortages of resources. Information obtained may be used in the decision of where to assign critical resources.

To gather this information you will need to log into the Forest Service IBM Computer Network.

Logging into the Forest Service Computer - (Dispatch Account):

Enter network password for microsoft networking:

1. Username: Enter **nmcif** (lower case, should come up automatically), press **tab**.
2. Password: Enter **nmcif98** (lower case), press **enter.**
3. Another window will pop up: Username: **nmcif** should be in this area.
4. Password: Enter **nmcif98** (lower case), press **enter**.

REPORTS

Morning NICC Fire Management Situation Report

1. Select the Internet Explorer Icon. This will take you to the Forest Service Web Page.

2. The internet address is: http://www.fs.fed.us/r3/fire. The is the Southwest Area Wildland Fire Operations Web Page.

3. Select Fire Intelligence from the menu at the left.

4. Select the National Fire Activity Report.

5. Print this report on the so-ldp printer. (This printer is located across the hall in the mailroom.)

6. Fax to only units requesting it. All units should be able to acess this information from the same web site.

7. Post on the bulletin board in the hallway.

Southwest Area Interagency Situation Report

You can retrieve this report in the same manner as above. This is a detailed report, describing unit by unit the amount and kind of activity in the past 24 hours. It also highlights events the zones report.

2. Under Fire Activity, select either the SWA Morning Fire Activity Report or the SWA Nightly Fire Activity Report.

3. Print this report on the so-idp printer.

4. Fax to only units requesting it. All units should be able to acess this information from the same web site

5. Post on the bulletin board in hallway.

SIT 300

This report is a detailed report showing the status and location of all Regional airtankers, lead planes, helicopters, Interagency Hotshot Crews, Type I & II Incident Management Teams, Temporary Flight Restrictions and the rotation of Southwest Area Type II Crews. This report is retrieved the same as above.

1. Select Fire Intelligence from the menu at the left.

2. Under Resource Status, select the SIT 300 Report.

3. Print this report on the so-idp printer.

4. Fax to only units requesting it. All units should be able to access this information from the same web site.

5. Post on bulletin board in hallway.

WEATHER FORECASTS

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During fire season the fire weather forecasts are posted on the internet twice daily. The first weather report is at 0930 and the second is at 1430. These reports will be downloaded and printed daily. The first report will be read at 1000 every morning. The second weather report will be read at 1500, unless heavy initial attack is in process.

1. Select the Internet Explorer Icon. This will take you to the Forest Service Web Page.
2. The internet address is: http://www.fs.fed.us/r3/fire. The is the Southwest Area Wildland Fire Operations Web Page.
3. Select Fire Intelligence from the menu at the left.
4. Under the Fire Weather Section, National Weather Service, Select Albuquerque/daily
5. Print this report on the so-ldp printer. (This printer is located across the hall in the mailroom.)
6. Fax to only units requesting it. All units should be able to acess this information from the same web site.
7. Broadcast the weather forecast via radio on MOSCA, CAPILLA, ADB-ALBQ, SPA-ABQ & N6S-NM ST.

On the console:

- A. Un-select all buttons on ALL consoles
- B. Press the SIMUL SELECT button
- C. Press each unit button to recieve the broadcast (MOSCA, CAPILLA, ABD-ALBUQ, SPA-ABQ & N6S-NM ST.)
- D. Broadcast the weather report. Document on the weather sheet, your initials, the date and the time you broadcast the weather report.
- E. Press the SIMUL SELECT button again to un-select

8. Post the weather report on the bulletin board located in the hallway.

DAILY BRIEFING

This is a summary of Geographical Coordination Center Coordinators conference calls. This summary comes out in the morning from SWCC, usually at the higher planning levels, sharing concerns of various Geographical Area Coordination Center.

1. Access this through the Internet by going to the web page SWCC.
2. Print it.
3. Post on the bulletin board in the hall.

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WEB PAGE

The ABZ has a Web Page which includes the following information:

-Coordinator on duty
-NFDRS outputs from WIMS
-National Reports
-Zone Reports
-IA staffing
-Detection flight schedules
-Crew rotation
-Planned Presribed Burns

This web page will be updated daily and as often as needed. Specific information on how to post each of the above is located in the Web Page Notebook located on the east wall.

WIMS

1. WIMS is done daily at 1400 and posted on the bulletin board.

2. There are several ways to get to the WIMS data entry. See one of the lead dispatchers for additional information. Specific Instructions on accessing WIMs on the computer, are found in the WIMS book located in the bookcase located on the West Wall. You will find two sets of instructions, Forest Service and BLM depending on which computer you are using.

CLOSE OF BUSINESS SITUATION REPORT - ICS - 209

1. This report is done on the IBM computer via the internet and includes all fire activity for all units in the zone in the past 24 hours.

2. Information from the units in the zone may come by phone, or fax.

3. This report is due in SWCC at the close of business or 2400 hours if we are open 24 hours.

4. To access the Situation Report on the internet:

-Select the Internet Explorer Icon
-From the Favorites list, select Southwest Area – Wildland Fire Operations (SW Fire Web Page) or Type http://www.fs.fed.us/r3/fire
-Select Fire Management
-Go to the Section labelled Dispatch
-Select SitReport-Unit Data Entry
-You are now in the Situation Report Data Entry Screen
-Select the Sit Report Button and enter
-The next screen will require a User Name and Password (See Coordinator on duty for this information). Then follow the screens for needed information.

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INITIAL ATTACK DISPATCH PROCEDURES

Reports of Fires or Emergencies - All reports are recorded on the "Incident Dispatch Record" form. This "yellow" colored form titled "Interagency Report of Incident and Dispatch Action" is located at each dispatch position.

1. Log initial incident information. These reports are received from various sources: lookouts, public, agency personnel and aircraft.

Final Incident Report will include:

- Incident Name (Fire will be named by the Lookout, if a lookout is not available the IC will name the incident)
- Incident Number: Log the "incident number". The incident number can be found in the "Incident Number" book, on top of the resource order rack. Record the date, time and "general description" of the incident in the Incident Number book. The incident number is also recorded on the "Incident Dispatch Record" form.
- Incident IC
- Date of Report
- Time of the Report
- Dispatcher taking initial report (Your Name)
- Agency Fire Number (FS, BIA, BLM, etc.)
- Location of Fire by Landmark.
- Reporting Party/Lookout (R.P./L.O.)
- **Phone Number (Be sure to get a call back number from the reporting party.)**
- Azimuth and Miles (If the incident is being reported by a Lookout.)
- Location of Fire (Township, Range, Section, etc.)
- Latitude and Longitude (If reported by aircraft.)
- If incident is a fire, what is the cause: Human or Lighnting.
- Type of fuels the fire is burning in.
- Dispatch Information: List all units that are committed, times the units are committed, the time they arrived on scene and when they become available.
- Notification Times: Notify the responsible agency (BLM, BIA, FS, etc).
- Initial Report Conditions: Fill in with information from the first unit on the fire.
- Size of the incident.
- List any additional resources that are requested.
- Fill out the Message Record as needed. Any information pretaining to the incident should be documented in this area of the form.
- Fire Status: Times will be listed as the fire is contained, controlled and when the incident is declared out. ***Include final acreage.***

2. Plot the fire on the initial attack map on the South wall. Determine the responsible agency (jurisdiction). Many of the reports we receive are not in our Zone. If in our Zone, notify the responsible agency for initial attack. If out of our Zone, pass reports through SWCC.

If fire falls in the CIF initial action zone, see the "Cibola National Forest Fire Management Action Plan", preplanned actions are outlined on page 21, Section D, items 1 through 7. This CIF Action Plan is kept in the binder labeled ABZ OPERATING PLANS located in the bookcase.

FOR ALL INCIDENTS, DOCUMENT YOUR ACTIONS ON THE "INCIDENT DISPATCH RECORD" CARD.

3. When the incident is completed, put the Incident Record in the Incident Number book, in order. Requests for all additional resources are placed on the appropriate resource order form (overhead, crews, aircraft, equipment and supplies). Resource orders forms are located at each desk in the right hand side, lower drawer. See specific information on how to fill our resource order forms for resources below.

a. If the request is from a local agency, it must be entered and numbered in the Incident Number Tracking Log.

b. Enter our incident number in "block 4, Office Reference Number" of the resource order form.

c. If it is a request from SWCC, all the information will be given to you. We do not log these orders in our Incident Number Tracking Log.

d. Place any open orders in the resource order rack.

e. Closed orders are kept on the rack in the data input slot. Once they are input into the data base then they are filed in the file cabinet against the East wall of Dispatch. Resource orders are filed in the correct folder by the type of resource order they are (overhead, crews, aircraft, equipment and supplies).

SPOT WEATHER FORECASTS/REQUESTS

1. The yellow "Spot Weather Special Forecast Request" forms are at each dispatch position, top right hand side.
2. Fill in information in blocks one thru 12.
3. Fax the filled out form using the "AWX" speed dial number on the fax machine. (842-9162). Telephone # to confirm receipt of fax is (505) 244-9148 or 9150.
4. The weather service will fax us the spot forecast. Read the weather forecast, over the radio, or fax to the unit requesting it.
5. Document on the spot forecast, date, time, and to whom the forecast was given. File form in the file cabinet.

AIRCRAFT PROCEDURES

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Aircraft Ordering Procedures

1. All request for aircraft require documentation on an Aircraft Resource Order form. Complete information regarding aircraft is in the **Southwest Area MOB Guide** in Chapter 25.

2. For "administrative flights" check with the individual agency dispatcher. There may be "agency-specific" policies that need to be followed.

Tactical Flights - Airtankers and Helicopters

All airtanker or helicopters requested for fire missions will be documented on the Aircraft Resource Order form. As a minimum, blocks 1, 2, 3, 5, 6, 11 and 12 **must** be filled in. **Do not** delay the dispatch because you do not have the management code, phone number or other minor detail
Airtankers - Albuquerque Zone has two Forest Service contracted Type II airtankers. The first tanker starts about April 29 and goes to about July 11. The second tanker starts about May 23 and goes to about July 15.

Airtanker Base Hours are 1000 to 1900, 6 days a week with one day off during contract periods. (Day off varies with Tanker).

Helicopter Base Hours are 0900 to 1800, 7 days a week.

Placing an Airtanker Order

Orders for airtankers can come from units within Albuquerque Zone or SWCC.

2. As soon as a request comes in, notify the tanker base of the request. Fill out the resource order, then fax it to the base and follow up with a phone call.

3. Use the **CAN** program on the computer located on the radio console to determine/confirm the0 latitude, longitude, and VOR headings and distances.

4. The airtanker base will then give dispatch **off time** and **ETA** to the fire.

5. Dispatch will **pass** the **off time** and **ETA** to the ordering unit. **Document** all actions on the resource order.

6. Send a **"Committed"** message on the IBM:

    1. Select the Netscape Messanger Icon
    2. The Password Entry Dialog box will appear. It will ask for a Password:
       Password for IMAP User: nmabz (lowercase)
    3. You are now in the dispatch messaging system. Select "New Msg" from the top toolbar.
    4. In the "To" type: nm (lowercase). This will bring up the address lists for New Mexico.
    5. Select: Southwest Area nmswc@dms

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6. In the Subject line: type "Committed" withthe Incident Number and the resource assigned.
7. Send message.

Once the resource is released an Uncommitted message must also be sent out. Same process listed above.

7. If there are no airtankers available at our tanker base, place the order with SWCC.

8. A **"Victor" (VHF) frequency** will be given, at the **time of dispatch,** to any airtanker,helicopter or lead plane dispatched to any Albuquerque Zone fires. Use 118.150 (primary) or 118.550 (Secondary.) These frequencies are the "preassigned" aircraft VHF frequencies for this zone. This will also require sending a **"Committed"** message on the IBM. Follow same process as listed above.

Lead planes - If a lead plane has been identified for Albuquerque Zone, contact the pilot directly with the request. If there has not been a lead plane assigned to the zone, place the order with SWCC.

Single Engine Aircraft (Seats) - Placing a Seat Order

1. Orders for seats can come from units within Albuquerque Zone or SWCC.

2. As soon as a request comes in, notify the seat base at Double Eagle Airport of the request. Fill out the resource order, then fax it to the base and follow up with a phone call.
3. Use the CAN program on the computer located on the radio console to determine/confirm the latitude, longitude, and VOR headings and distances.

4. The seat base will then give dispatch **off time** and **ETA** to the fire.

5. Dispatch will **pass** the **off time** and **ETA** to the ordering unit. **Document** all actions on the resource order.

Air Attack Aircraft - are available from various aircraft vendors. A notebook is located on top of the resource order rack labelled "Aviation Vendors". This will list all aviation vendors available to the ABZ.

1. Place the order on a Aircraft Resource Order.

2. Check with vendor to see if one is available.

3. Fax the resource order. Vendors will advise the zone with the pilots name, N number, off time and ETA.

Helicopter - Albuquerque Zone has two contract Type III helicopter. One is the Sandia Helicopter and the other is the BIA Southern Pueblos Helicopter.

1. **Helicopter Ordering Procedures**

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A. Order helicopter on an Aircraft Resource Order.

B. Contact specific Heliport by phone, then fax the order.

C. Foreman will notify dispatch when off the ground, who is flying (by name) and their ETA to the fire.

D. Contact the ordering unit and give the ETA's for the helicopter, fuel truck and the helitack truck. Document all information on the Aircraft Resource Order form.

E. Send an IBM **"Committed"** message indicating that H-312 committed to a fire. (See the Intelligence Section for specific direction on using the mailing list.)

2. **CWN Helicopters** - Follow the ordering procedures contained in the Southwest MOB Guide.

Infrared (IR) Aircraft - IR aircraft are ordered through SWCC. These are National Resources, and may not be available for area fires due to priorities set at NICC.

1. **Ordering IR aircraft** - are ordered on an Aircraft Resource Order. At the time of order the "Infrared Aircraft Scanner Order" form also must be filled out. Flights to the same fire on successive days require separate "A" request numbers. A new "Infrared Aircraft Scanner Order" is required for each flight even though the information may not change from day to day.

2. After the order is placed with SWCC, they will call with the aircraft number, flight crew names and the flight plan. Document this information on the resource order and flight follow accordingly.

Call-When-Needed (CWN) Fixed Wing - For approved rental aircraft, see the "Aviation Vendor" book located on top of the Resourc Order Turn Table located at the right hand side by the big map. There are tabs for the Cibola National Forest BPA (Blanket Purchase Agreement) aircraft. Gallup Flying Service, Mountain Aviation and Socorro Air Taxi are on CIF BPAs. There is specific direction contained in the Southwest MOB Guide in Section 25 or check with one of the Zone Dispatchers.

1. **Administrative Flights** - Check with the agency dispatcher as there may be agency specific policies.

2. **Tactical Flights** - All requests are documented on the Aircraft Resource Order. Reference the "Aviation Vendors" book located above the resource order rack. State Forestry should order their recon aircraft directly from the vendor or the zone must issue a "reimbursable" or unique management code then bill the State for those costs.

Miscellaneous Aircraft Orders - Request for some items are placed on Aircraft Resource Orders even though they are not aircraft. These items include: temporary flight restrictions (TFR) and aircraft VHF (Victor) radio frequencies.

1. **Temporary Flight Restrictions (FAR 91.137)** - Units may place an order for a temporary flight restriction (TFR) with the Zone. We place the order with SWCC whom coordinates with the FAA. The "standard" is five nautical mile radius from the given latitude/longitude and 2,000" AGL (above

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ground level.) More information can be found in the MOB Guide and the "Interagency Airspace Coordination Guide" in the East bookcase.

2. **VHF (Victor) Radio Frequencies** - These are FM frequencies to be used for air to air communication for the incident aircraft. Albuquerque Zone is "pre-assigned" 118.150 as a primary frequency and 118.550 as a "secondary" frequency for this purpose. Any additional VHF frequencies needed must be ordered through SWCC.

EQUIPMENT/SUPPLIES

Resources Mobilized - Equipment refers to firefighting and support items such as radios, rolling stock, National Caterers, National Shower Units and many other items.

Equipment orders are handled by Albuquerque Zone Dispatch. Supply requests from incidents with Incident Management Teams go through expanded dispatch. Supply orders from smaller incidents usually come through the zone, but the Units MAY go directly to Silver City Fire Cache. More direction can be found in the MOB Guide in Section 24. For "fire replacement" order, check with the Zone Dispatcher.

Placing/Receiving Equipment Orders

1. **Engines** - Check on the "T-card" rack on the East wall to see if the Zone has any engines of the type ordered. If we do have some, go to the FMO on the Unit with that resource. If not, we must go to State Forestry (N6S) or go to SWCC with that request. Try the "closest resource" first.

2. **Type I or Type II Engines** - Are available from fire departments through New Mexico State Forestry (N6S.)
3. **Water Tenders - Agency**

   New Mexico State Forestry (N6S) has access to many water tenders from Volunteer Fire Departments all over the Zone. Usually available for "short assignments".

4. **Water Tenders - Contract**

   A. See the "equipment and misc. BPA's book in the East wall bookcase.

   B. See the "Fire Support and Supply Plan" book in the East wall bookcase.

   C. Order a water tender from SWCC.

5. **Dozers - Agency**

   A. Cibola N.F. Engineering owns one. Check with John Elmquist or John Merino to order it. Phone numbers are listed in the phone directories at each of the radio consoles.

   B. BIA-ZUA also owns one, available through ZUA. This is a resource shared between SPA, LAA, RNA, and ZUA. Phone numbers are listed in the phone directories at each of the radio consoles

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C. N6S - State Forestry has access to dozers, order through the duty officer on call. Phone numbers are listed in the phone directories at each of the radio consoles.

6. **Dozers - Contract**

A. See the "Equipment and Misc. BPA" book in the East bookcase.

B. See the "Incident and Services Supply Plan" notebook in the East bookcase. This is a supply plan for three forest Cibola, Carson and the Santa Fe. If you use a resource from another forest, you must notify that forest with a courtesy call.

C. Order through SWCC.

7. When ordering from the Silver City Fire Cache, use NFES numbers and descriptions. Orders to the cache can be by FAX. Follow up with a phone call to the cache.

8. The Unit filling the request should notify you of the following:

A. Resource assigned.

B. ATD - Actual Time of Departure.

C. ETA - Estimated Time of Arrival.
D. GBL numbers, flight itinerary, number of pieces etc.

9. Relay the above information to the ordering office through established ordering channels.

Receiving Orders/Requests - Orders from SWCC, local units or expanded dispatchers will come via established channels. Be sure to get complete and correct information. Check with a zone dispatcher if you have questions.

ALBUQUERQUE MOBILIZATION CENTER

The MOB Center is supported by Albuquerque Zone Dispatch.

To Open the MOB Center:

SWCC places an equipment order with the Zone to open the Albuquerque MOB Center. This request will include the P-number and the time it needs to be operational.

2. ABZ will contact the on-call MOB Center Manager with the request from SWCC. The MOB Center schedule is located in a folder marked "MOB CENTER INFO" in the lower bottom drawer on the right hand side at each console. The MOB Center Manager will contact his or her team members.

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3. For specific MOB Center information, see the "MOB Center Operating Plan" in the binder labeled "Operating Plans". It is in the bookcase on the East wall in Dispatch.

RESOURCE ORDERS

National Incident Radio Support Cache

1. The communications section of the NFES catalog contains the various components and terminology of communications equipment. It is helpful to become familiar with the different kits available.

2. **Starter system (NFES #4390)** is one of the items on the "tickler list" of things to order once an Incident Management Team has been ordered.

The following is a list of the items contained in this kit:

NFES #4381	3 ea. CMD/TAC Radio Kits
NFES #4312	1 ea. CMD/TAC Repeater Kit
NFES #4370	1 ea. Ground A/C Radio Kit
NFES #4330	3 ea. Remotes
NFES #4244	1 ea. Logistical Radio Kit
NFES #4248	1 ea. Log. Repeater Kit

Antennas for the 4312, 4370, and 4330's are included.

Total: 10 boxes, 1100 lbs, 41 cubic ft.

3. Latitude and longitude is required at time of order to ensure proper radio frequencies are assigned for each incident.

National Caterers and Mobile Shower Units

1. When the use of contract food services is contemplated, National Contract Caterers will be used if **600** or more meals are to be served and these contractors are reasonably available. National Contract Caterers will be given the opportunity to provide three meals per day unless other arrangements are mutually agreed upon.

2. All orders for National Caterers and/or shower units will be placed with the SWCC equipment desk. The supplemental "Food Service Request" form must also be filled out and be sent to SWCC at the time of order. Blank forms are kept in the resource order rack.

3. Copies of the "National Interagency Mobile Food Services and Shower Facilities Contracts" books are located at each dispatch position.

Mobile Support Cache Vans - One mobile support van (Trailer) is prepositioned at the Southern Pueblos Agency.

1. When receiving requests for a cache van, document request on an Equipment Resource Order form, then notify the Southern Pueblos Agency. Try SPA first for a truck tractor and driver to deliver the van. If SPA is unable to handle, try ZUA. If ZUA is unable to handle, then try the Silver City Fire Cache.

2. Before the cache van leaves for the incident, get an ETA and advise the driver he should return the empty trailer to the Silver City Cache. While at Silver City, the driver can pull a replacement cache van trailer to SPA.

3. Give SWCC the order number, request number and the P-number that the cache van was ordered on so they can pass this info to the Cache.

Supply Orders

1. **Cache Items** - Document supply items on an Supply Resource Order Form, with the correct NFES number and a brief item description.

   A. Fax the order to the Silver City Fire Cache (SFK on the fax machine.)

   B. Follow up with a call to the cache to make sure the complete order was received and legible.

2. **Cache Replacement (Fire Replacement) Orders** - These orders are submitted to the cache on the "Cache Replacement Order" form. This is for replacing items used, damaged or lost on an incident. The following items are needed by the cache at the time of order.

   A. **S-numbers from the incident.**
   B. **Approval (Signature) from the Supply Unit Leader, IC or agency official.**
   C. **Fax the order to the cache, then follow up with a phone call.**

3. **Local Purchases** - Some items, such as toilet paper, paper towels, Chapstick, motor oil are best purchased locally instead of supplied by the cache. When you are receiving this type of order, you should:

   A. Make a copy of the order.

   B. Highlight the S-number and item.

   C. Give the order to Purchasing or the Buying Unit if one is in place. Document on the order and follow up.

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4. **Meals/Hotel Rooms** - These request are documented on an Supply Resource Order form. The Meal and Hotel BPA books are in the bookcase on the East wall. The "Meal/Room Order" forms are kept on this bookcase.

A. In addition to the resource order, a "Meal/Room Order" form must be filled out and logged into the binder labeled "Meal/Room Orders". This binder is kept in the East bookcase.

1. This form MUST be signed by the person receiving services.
2. White copy goes to the vendor.
3. Yellow copy gets stapled to the resource order.
4. Pink copy goes to the B & F section, stapled to a COPY of the resource order.

FREQUENCY MANAGEMENT

Frequency information for the entire Southwest Region can be found in the SOUTHWEST AREA MOBILIZATION GUIDE - Chapter 70 - Equipment (1-6).

Frequency Management - This is a system designed to manage radio frequencies on incidents for effective incident communications.

1. **Initial Attack** - First report of fires will be on the agency primary frequency.

CIF F1 = 171.450

If more ground resources are ordered, the incident should be moved off the agency prime frequency (CIF F1=171.450) to a "project net frequency" (i.e., CIF F3 = 171.225).

2. **Albuquerque Zone Preassigned Frequencies**

Albuquerque Zone has **168.600 (NIFC TAC 3)** as our **preassigned** "tactical frequency". This frequency s used for **ground units** tactical fire communications.

3. **Albuquerque Zone Peassigned Aircraft Frequencies**

VHF or **VICTOR** frequencies, primary 118.15, secondary 118.55.

GROUND to AIR CONTACT frequency, use 166.675 (Air Tactics 1).

Helicopter VHF, 122.850, is for helicopter air-to-air communications.

If additional VHF frequencies are needed, they can be put on an Aircraft Resource Order and ordered through the aircraft desk at SWCC.

Aircraft Flight Following - All flight following will be on frequency 168.650. If unable to reach aircraft on flight following, use agency administrative or primary frequency.

Air Guard (168.625) ***is for emergencies only.*** If aircraft can not be contacted on any other frequencies, use air guard to divert, cancel or for initial contact. When contact is established, advise aircraft to come up on another frequency for discussion.

COMMITTED MAILING LIST

1. Use this mailing list when National Resources are committed to fires.

2. Via the computer, send a "short message":

    a. Select the Netscape Messanger Icon
    b. The Password Entry Dialog box will appear. It will ask for a Password:
    Password for IMAP User: nmabz (lowercase)
    c. You are now in the dispatch messaging system. Select "New Msg" from the top toolbar.
    d. In the "To" type: nm (lowercase). This will bring up the address lists for New Mexico.
    e. Select: Southwest Area nmswc@dms

    f. In the Subject line: type "Committed" with the Incident Number and the resource assigned.
    g. Send message.

    EXAMPLE:

    Subject: H-312, TANKER 11 AND CARSON HS COMMITTTED TO THE MESA FIRE, NM-CIF-121.

3. When resorces are released, send a "release message".

4. Via the computer, send a "short message".

    Subject: TANKER 11 RELEASED TO ABQ FROM THE MESA FIRE

T-CARDS

1. T-cards are a visual aid to keep track of resources.

2. The blank T-cards are in a box on the resource order rack.

3. Fill out the header card (grey) with the incident name and order number.

    A. Use a T-card for each resource and place in the T-card rack on the East wall under the header card.

    B. Some resources have T-cards pre-made with their information in the T-card rack

OVERHEAD/CREWS

General Information

1. From this zone, there are four main categories of Overhead/Crews that can be dispatched.

   A. Overhead

   B. Incident Management Teams

   C. Smokejumpers

   D. Crews

2. We generally receive crew/overhead request from SWCC. We also assign local zone overhead/crews to fire within the zone.

3. Each overhead or crew need their individual request number from one of the following categories

   A. O = Overhead. Incident Management Team members (one O number per person, CWN helicopters modules (one per person) or smokejumper booster crews, (one O number per person.)

   B. C = Crew. This includes Type 1, Type II, or camp crews. (One C number per crew.)

   C. IA = Initial attack Smokejumpers. This includes the smokejumper aircraft. One IA number per individual.

MOB/DEMOB

1. MOB

   The Southwest Area "Night Driving Policy is as follows:
   ***Travel between the hours of 2200 hrs. and 0400 hours only if:

   Drivers condition is such that driving and travel can be done in a safe manner AND one of the following can be met:

   Destination can be reached with two hours; or, drivers can be changed every two hours, or, drivers have had eight hours off shift or off duty status prior to beginning travel.

2. DEMOB

   Resources are to be home by 2200 hours. If they can not make it home by 2200 hours, they must RON and travel after 0600 hours next morning.

Emergency Messages/Releases

1. Emergency messages and requests for emergency releases are passed through dispatch channels.

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2. Document all information on the "Emergency Release/Message" form. Pass the information on to the crew desk at SWCC for people on the crews or the overhead desk for overhead.

3. Document all conversations and FOLLOW UP!!!! Emergency messages and releases need to be handled ASAP, do not delay. They can be faxed to SWCC, BUT follow up with a phone call to confirm it was received.

OVERSTAT

This is the primary method used to locate overhead for incidents. All agencies will be responsible for submitting their availability updates every Thursday. ABZ will update OVERSTAT and run a new overstat report every Monday during high fire season. This report will be posted in the OVERSTAT notebook located over the resource order bin.

Program will display any "Available" persons with the qualifications in the zone.

We then go to that Unit FMO with the resource order (Request). If the person accepts the assignment, we "commit" that person in that OVERSTAT program. If that person turns down the request, we change that persons' availability to "unavailable". All information is to be documented on the resource order.

The users guide for Overstat Program is kept in the bookcase against the East wall (not yet available).

CREWS

1. Including the Zone Interagency regulars, ABZ has twenty-five crews. The following are the home units and three letter identifiers (Agency ID) for the crews.

CREW	AGENCY ID	HOME UNIT
Acoma	CIF	Mt. Taylor, R.D. FS
Conchos	CIF	Black Kettle R.D., FS
Isleta	SPA	Southen Pueblos Agency, BIA
Laguna	LAA	Laguna Agency, BIA
Los Toros	CIF	Mountainair R.D., FS
Magdelena	CIF	Magdelena R.D. FS
Ramah-Navajo	RNA	Ramah-Navajo Agency, BIA
San Felipe	SPA	Southern Pueblos Agency, BIA

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Zuni	ZUA	Zuni Agency, BIA
ABZ IA Regulars	IA	ABZ Interagency

2. To order a crew, CONTACT the home unit FMO, AFMO or their acting.

3. The current **crew rotation** is displayed on a clipboard on the side panel of the first radio console, and on white board on the south wall. This crew rotation is used ONLY for **"out-of-zone"** fires. For zone fires, the "closest resource" concept is used. We will honor name request from SWCC, if a specific crew is requested.

4. The **"Southwest Firefighter Crew Management Handbook"** contains detailed information on Southwest Area Type II and camp crews. There is one at each dispatch position.

5. **Camp Crews/MOB Center Workers -** Requests for camp crews will go on the Crew Resource Order. MOB Center workers will go on an Overhead Order. There is a rotation for camp crews, but due to the fact that very few requests are received for out-of-zone incidents, the camp crew rotation is used for ALL camp crew orders.

6. **Buses** (for crews) are normally supplied by the home unit. If the home unit requests a bus from the Zone:

    A. Do any Equipment "support order" for the bus. Use the original P number, with the ABZ incident number.
    B. Try Mountainair R.D., Mt. Taylor R.D., or Magdelena R.D., which ever is closest, to supply a bus. If the MOB Center is open, they also MAY have a bus available. Document all of your actions on the Equipment Resource Order for the bus.
    C. **Regardless of who orders the bus, ABZ will issue an E number.**

INCIDENT MANAGEMENT TEAM

1. **Type 1 Teams -** ABZ has members on both of the Southwest Area Type I teams. The current team rosters are posted on the bulletin board located in the hallway. The ABZ team members are highlighted on the rosters. We see that our team members get the word when their teams are called out. Generally, the orders for teams are faxed to us from SWCC, unless the team was ordered for a ABZ fire, in which case, we would cut the order.

2. **Type II Teams -** ABZ also has members on both of the New Mexico Type II teams. Those rosters are on the South wall bulletin board. The ABZ people are highlighted. Procedures are the same as for Type I teams shown above.

Smokejumpers

1. **Initial Attack -** If jumpers are requested, we will order them on an overhead order with "IA" request numbers. The order will go to SWCC overhead desk. Smokejumper booster crews are based in Silver City, Springerville, AZ and sometimes Sante Fe.

2. If smokejumpers are available, SWCC will give us a ETA, Jumper Spotters name and aircraft identification.

COMMERCIAL TRAVEL ARRANGEMENTS

1. **SATO TRAVEL SERVICE** - To make PREPAID travel arrangements for Forest Service overhead, contact SATO Travel Service.

Monday - Friday	**0800-1700**	**842-6585**
After hours and holidays		**1-800-827-7777**

Our "office reference number" is **5UVO.** Identify yourself as being with the CIBOLA NATIONAL FOREST - NOT Albuquerque Zone.

2. **OMEGA TRAVEL SERVICE** - To make PREPAID travel arrangements for Dept. of Interior overhead, contact OMEGA Travel Service.

Monday - Friday	**0800-1700**	**877-434-1568**
After hours and holidays		**1-800-808-7965**
CODE: PLTB		

A. **ABZ FLIGHT ITINERARY** - This is a form we use to document someone's commercial travel information. The blank form is kept in the blank resource order rack. When filled in with all their travel information, fax this form and a copy of their order to the traveler so they have paper copies.

B. Attach the original form to the Overhead Resource Order.

C. Pass the travel information to SWCC using the Dispatch messaging system.

Dot mobs will have to be completed for all resource movement except for Aircraft and Supplies.

Dot mobs will be transmitted via the dispatching messaging system.

Prescribed Burning Reports

1. Units will notify ABZ on the day they plan to burn. ABZ will report this information on the SIT Report.

2. Via the computer, send a "short message":

    a. Select the Netscape Messenger Icon
    b. The Password Entry Dialog box will appear. It will ask for a Password.
    Password for IMAP User: nmabz (lowercase)
    c. You are now in the dispatch messaging system. Select "New Msg" from the toolbar.
    d. In the "To" type: nm (lowercase). This will bring up the address lists for New Mexico.
    e. Select: Southwest Area nmswc@dms
    f. In the Subject line: type "ABZ RX Burn Notification"
    g. The following information should be included in the message:

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Date
Unit
Acres
Legal
VOR
Landmarks
How many days they plan to burn

h. Send message.

3. Print on the default printer (so-ldp), then post on the dispatch map behind you.

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Albuquerque Zone Re-location Proposal #1

Expansion of the Albuquerque Zone at the current location Cibola National SO

The personnel at the Albuquerque Zone has increased in the last few years. The zone consists of four dispatchers and one coordinator, with the hopes of including other agency dispatchers. The space that the four dispatchers currently occupy is a 71'x71' single room. This houses all of the radio equipment plus three office cubicles for three of the four dispatchers. There is no room for the Coordinator or any additional personnel.

One of the proposals is to possibly enlarge this facility to house all of the initial attack dispatchers. This would include three to four radio consoles plus four offices. These offices would have to be in close proximity of the radio for monitoring purposes. The Coordinator's office and expanded dispatch facilities would also have to be accommodated.

Space for fax machines, copiers, and other office machines will be needed. Storage space for supplies, records, forms, etc. will be needed

The expansion proposal mentioned was to try to acquire additional space from the Animal Damage Control offices next door. This option has been explored several times in the past with no success. It seems that at the time this option was explored, the only office space they were willing to give up is not easily accessible by our dispatch office. We would have to split up dispatch into two office areas and with most of the dispatchers having to work the initial attack desk this would not be feasible. We are willing to work with the this option if we are able to keep all the functions of dispatch in the same general area.

The SO is also short on space and with the new fuels funding and hiring, this would cause an even greater space shortage.

Albuquerque Zone Re-location Proposal #2

Co-locating with Fire Use and Training Academy (FUTA)

Since FUTA has become a regional program there has been talk of moving the current location of the facility from the Mob Center to a more accessible location. After talking with Jerome Macdonald, Coordinator of FUTA, he is willing to look at the possibility of the ABZ and FUTA co-locating at a new facility. This would cut down on the amount of space that would be needed for both of the facilities. Since FUTA classes are held during the fire dispatch slower months, fall and spring, it would work out that the conference areas could be utilized as expanded dispatch as well as training rooms, etc.

Albuquerque Zone Re-location Proposal #3

Due to the lack of space available at the current location (Cibola SO), relocating the Albuquerque Zone to an existing building facility would be an option. A building with at least 2150 square feet would be required. This would include primary office space for 8 individuals at 150 sq. ft. for each person (1250 sq. ft.). An office support area of 200 sq. ft., general storage 300 sq. ft., automated data processing area of 200 sq. ft. and conference and training facilities 200 sq. ft. We are currently working with the State of New Mexico to acquire some space or building from their agency. This so far has not turned up much. Safety would also be an issue due to 24 hr office coverage during high fire season. Parking area of at a minimum of 10 spaces would be required.

Costs have not been figured for any of the above proposals.

REVIEW COPY

Environmental Assessment
Assessment of Effect
December 2000

JOINT FIRE MANAGEMENT PLAN BETWEEN THE BUREAU OF LAND MANAGEMENT, NATIONAL CONSERVATION AREA, AND THE NATIONAL PARK SERVICE, EL MALPAIS NATIONAL MONUMENT NEW MEXICO

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REVIEW COPY

Environmental Assessment
Assessment of Effect

Joint Fire Management Plan Between the Bureau of Land Management, National Conservation Area, and the National Park Service, El Malpais National Monument

New Mexico

Summary

The need for the preferred alternative is based on a wide recognition that fire is a necessary and appropriate tool used to restore and maintain sustainable forest and range ecosystems into the future. Through a cooperative management approach, wildland fires on the combined 376,948 acres of land also can be managed in response to human needs while meeting mutual resource goals and objectives. An interdisciplinary, interagency team of specialists identified policy-driven strategies with which to address an array of integrated land management objectives and constraints. Consensus was reached on a preferred alternative: development of a Joint Fire Management Plan that will provide for the following.

- A full range of options under an appropriate management response strategy in areas where fire is desired to achieve resource benefits with few constraints to its use.
- Prudent applications of prescribed fire and non-fire treatment strategies to mitigate hazard fuels buildups and noxious and non-native plants and to restore fire, where appropriate, to fire-adapted vegetative communities.
- Suppression of all undesirable wildland fires that threaten life, property, or other values at risk.

This assessment includes a "no-action" alternative and a non-fire, fuels treatment alternative. The environmental consequences of each alternative were considered for each impact category. No diminishment of the integrity or quality of the natural and human environment in the short-term, in the long-term, or cumulatively was identified through this assessment of effect.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the two agencies listed below. This environmental assessment will be placed on public review for 30 days. Please note that the names and addresses of people who comment become part of the public record. **If you wish to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Complete copies of the Joint Plan and environmental assessment are available upon request at the BLM Albuquerque Field Office, 435 Montano Rd. NE, Albuquerque, NM 87107, or the NPS, El Malpais National Monument, 123 East Roosevelt Avenue, Grants, NM 87020.

REVIEW COPY

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PURPOSE AND NEED

The purpose of this document is for the National Park Service (NPS), El Malpais National Monument, and Bureau of Land Management (BLM), National Conservation Area (NCA), to jointly assess the effects to the natural and human environment resulting from the implementation of a Joint Fire Management Plan (referred to as the "Joint Plan" or the "Plan").

The need for a Joint Fire Management Plan is based on the precept that a sound, science-based fire management program is essential for the protection of human life and property and for the restoration and maintenance of diverse and sustainable ecosystems.

The pre-settlement fire regime (before 1880), where naturally recurring fire disturbances kept surface fuel loadings low and trees open and park-like with grassy understories, became severely disrupted with the onset of 20th century fire suppression policies. The repeated, historic, low-intensity surface fires that served to drive important ecological processes in the southwest were ended abruptly before the turn of the 20th century (Bennett 1974, Dieterich 1983, Swetnam and Baisan 1994, Wolf and Nast 1998).

El Malpais National Monument (and also assumed within the majority of the NCA) contains numerous and well-preserved fire-scarred samples that were used to develop multi-centennial fire chronologies over a wide geographic area. Henri Grissino-Mayer, reporting in a dissertation titled *Tree-Ring Reconstructions of Climate and Fire History at El Malpais National Monument, New Mexico* (1995) reports that wildfire was a common phenomenon in malpais forests since at least AD 1350. At the site level, fires (before 1880) occurred approximately once every 5 to 12 years. Minimal intervals ranged between 1 and 3 years, and maximum intervals ranged between 12 and 55 years. At the regional level, Grissino-Mayer reports that fires occurred somewhere within the study boundaries approximately once every 2 years. However, Grissino-Mayer (1995) also reports that there was a major change in fire regimes in the malpais region in approximately 1940. This is thought to reflect intensive and successful fire suppression efforts by land agencies. Before this time, fires in the often rugged and inaccessible sites received less attention, and therefore, suppression was less effective. Early grazing practices may have affected fire-carrying grasses, often resulting in minimal spread, but woody fuels and litter began to accumulate. Consequently, many of today's fires behave much more erratically and intensely. Often these fires destroy overstory, midstory, and understory; surface plant cover; stored seed and reproductive components; and soil microorganisms.

The El Malpais ("Badlands") NCA encompasses 262,100 acres, and El Malpais National Monument covers 114,848 acres. These areas are located in western New Mexico (see map in Appendix B) south of the town of Grants and are accessible via State Routes 117 and 53. Both agencies are within the Department of Interior (DOI).

Enabling legislation creating the NCA (P.L. 100-225), along with the Federal Land Policy and Management Act (FLPMA) and National Environmental Policy Act (NEPA) provide overall management policy direction and the basis for decision-making. The Rio Puerco Resource Management Plan (1986) and the El Malpais Plan and Environmental Impact Statement (EIS) (Draft, 1999) provide direction for managing the natural, cultural, social, and wilderness resources and land uses within a comprehensive framework for the NCA.

The enabling legislation creating El Malpais National Monument (PL100-225) and the park General Management Plan (GMP) of 1990 provide program direction and resource goals to ensure the perpetuation of natural and cultural resource processes and features for future generations.

As directed by the Secretary of Interior, all (DOI) agencies that manage vegetation capable of burning are required to develop and implement a wildland Fire Management Plan (FMP). The existing BLM FMP for the Albuquerque Field Office (1998) provides management direction for wildland fires within agency administrative boundaries only. A joint FMP will accommodate mutual fire management planning and operations across agency boundaries, thereby maximizing efficiency while minimizing costs. The Plan also will account for individual agency policies, procedures, and constraints while ensuring a close link of the two programs into the future.

The overall resource goal that directs the BLM to manage resources comes from the Draft El Malpais Plan and EIS (1999), Chapter 2-19 is:

> *The goal of the fire management program is to protect visitors, other land users, wildlife, livestock, and special physical resource features of the Planning Area. Prescribed fires and wildland fires [under prescription] will be used by other resource programs to improve the vegetative resources and help achieve vegetative objectives; protect, improve, or enhance wildlife and livestock habitats and watershed values; reduce the fuel load; and blend fire back into the natural process of a functioning system.*

The primary resource management goal directing the NPS in managing the Monument's resources is stated in the Resource Management Plan (1997), page 4; and paraphrased in the 1992 El Malpais National Monument Fire Management Plan, page 12:

> *Preserve, understand, and protect the cultural and natural resources of the Monument within naturally functioning ecosystems, consistent with cultural resource preservation.*

The scoping process (described below) resulted in the identification of wildland fire-related resource goals (or desired conditions) discussed under "alternatives considered" that result from the use of fire and non-fire strategies to restore altered vegetation and high fuels concentrations back to a historical range of variability. The reduction of the potential for unwanted, stand-replacing crownfires while facilitating the reintroduction of fire as an important natural disturbance event over the long-term was widely recognized throughout the scoping and assessment processes and serves as a fundamental principle of management.

Scoping for this environmental assessment (EA) was conducted from May 25 through July 25, 2000. At the direction of the agency administrators, an interagency (BLM and NPS), Interdisciplinary Team (IDT) was formed. The team identified issues, concerns, and opportunities and arrived at a consensus on goals for the program. In addition, team members consulted with federal and state agencies having direct and indirect jurisdiction over fire management and resource protection in the Malpais area. The following scoping issues were identified through this process and are included in the EA for analysis.

Issue: Fire management activities within the NCA and Monument may have adverse impacts on cultural resources that may or may not have been inventoried.

Issue: Fire in areas adjacent to private ownerships, reservation lands protected by the Bureau of Indian Affairs (BIA), or the Cibola National Forest lands must receive aggressive suppression action until agreements are in place.

Issue: There will be temporary, cumulative air quality impacts that will affect the townsites of Grants-Milan and Interstate 40.

The following issue from the scoping process was considered irrelevant or lacking in substance and therefore was dropped from further analysis.

Issue: The existing route into the West Malpais Wilderness, which provides access to range improvements for grazing permitees, also would provide access for prescribed fire treatments to reduce hazardous fuels. This issue was not evaluated further as the area will be managed for fire use for resource benefits, and any planned prescribed fire treatments or related management activity will be primarily around selected areas of the Wilderness boundary to keep wildland fires in prescription under the Plan.

ALTERNATIVES CONSIDERED

The development of the alternatives discussed in this section was based on and driven by broad agency fire-related resource objectives. These objectives also serve as the basis for Joint Fire Management Plan program goals. They are listed below followed by the appropriate alternative for which that goal applies.

- Firefighter and public safety is ensured from all wildland and prescribed fire. (ALL ALTERNATIVES)
- Wildland fire hazard around developed areas and identified cultural sites and features is mitigated. (ALL ALTERNATIVES)
- Human-caused wildland fires on joint agency lands are prevented. (ALL ALTERNATIVES)
- There is safe and efficient suppression of all unwanted wildland fires with minimum cost while protecting values at risk. (ALL ALTERNATIVES)
- Primary natural resources and their processes are fully restored and maintained. [ALTERNATIVE A (PREFERRED)]
- Public awareness and support for the joint agency wildland fire management program is fostered. [ALTERNATIVE A (PREFERRED)]
- Air-quality-related values, including visibility and human health, are protected. (ALL ALTERNATIVES)
- A body of scientific knowledge on the role of fire in the ecosystem is developed for purposes of public education and adaptive fire management. [ALTERNATIVES A (PREFERRED) AND B (NO ACTION)]

Alternative A: Preferred Alternative

The preferred alternative defines the rationale for the action in terms of resource protection and management, the recreational user, costs, and public benefit. All actions described in this preferred alternative are consistent with BLM and NPS management documents and Interagency Fire Policy (1995). For definitions of terms used in this section, refer to Appendix A.

The preferred alternative, through the development and implementation of a Joint Fire Management Plan between the BLM, NCA, and the NPS, El Malpais National Monument, is to

- provide for a full range of options, under an appropriate management response strategy, in areas where fire is desired to achieve resource benefits with few constraints to its use;
- provide for prudent applications of prescribed fire and non-fire treatment strategies in selected areas to mitigate hazard fuels buildups, control noxious and non-native plants wherever feasible, and restore fire where appropriate to fire-adapted vegetative communities; and
- provide for suppression of all unwanted wildland fires that threaten life, property, or other values at risk.

The term "Appropriate Management Response" (AMR) is defined as specific actions taken in response to a wildland fire to implement protection and fire-use objectives. For example, where assessment of an initiating fire indicates that the wildland fire has the potential to threaten identified values or cross agency boundaries (where no agreement exists that allows for crossing), a prompt and aggressive suppression action will be taken to minimize such threats at a minimum cost. At the other end of the AMR spectrum, the manager has discretion (based on pre-approved prescriptive and other criteria) to actively monitor a wildland fire as long as criteria are met. A Maximum Manageable Area (MMA) for the fire will be established (for example, the wilderness boundary), and within the bounds of this area, fire will be allowed to achieve stated resource objectives. If any established threshold condition (a sudden change in weather or fire behavior, a potential to breach the MMA, the smoke threshold exceeded, etc.) that creates an unwanted wildland fire condition is met or exceeded, a reassessment is initiated and a new strategy (or AMR) is selected, approved, and implemented. This process is followed throughout the duration of the wildland fire.

It should be noted that approximately 40% of the total joint planning area consists of long-needle conifer (ponderosa), 15% consists of short-needle conifer (pinyon-juniper), 15%consists of grasslands (capable of carrying fire), and 15% is classed as "sparse or barren." Hazardous fuel (*i.e.*, excessive accumulation) conditions exist on approximately twothirds of the conifer types, which includes closing-canopy pinyon-juniper that has little or no surface fine fuel component. These areas (non-wilderness) will require some form of mechanical treatment followed by prescribed fire to mitigate this hazard. Overall, it is estimated that following an extended fuels management schedule, approximately 15,000 acres will have been treated with prescribed fire in combination with non-fire (mechanical) treatments.

Aside from the more obvious benefits of fuels reduction, the preferred alternative will result in long-term beneficial vegetative, aesthetic, and wildlife responses. Under prescribed conditions, periodic fire stimulates understory forage for a variety of animal species by allowing increased sunlight to reach the soil surface. This effect favors creation and maintenance of many native grass-forb-shrub species that require frequent openings while helping ponderosa pine re-establish its historical, multi-aged dominance in the overstory. Further benefits of fire application include the recycling of available nitrogen and other critical elements necessary for plant growth and lowering the risk of insect/disease epidemics.

Fire will be allowed to play a more natural role within designated wilderness, thus minimizing human disturbance resulting from management activities. Over the past 100 years, many vegetative communities in the wilderness areas have become stagnant or deteriorated. Human use and climate change have altered the mix of plant species and their locations. The more open grasslands have changed over time to grass-shrub communities and pinyon-juniper woodlands (USDI BLM 1999). Additionally, woody species (primarily pinyon and juniper trees) densities have increased in the ponderosa pine communities, decreasing the open and park-like structure. As fire is gradually reintroduced into the wilderness ecosystem, both the composition and density of trees will change over time, allowing for a more open canopy with an increasing understory of grasses.

Under the preferred alternative, three Fire Management Units (FMUs) would be identified for BLM and NPS lands. An FMU is defined as any land area definable by objectives, topographic features, access, values to be protected, political boundaries, fuel types, or major fire regimes that set it apart from an adjacent unit. Normally, units have pre-selected AMR strategies that correspond to prescriptive conditions (weather, fuels, location, etc.) that, when met, are designed accomplish stated resource objectives.

The units and the primary strategy(ies) for each are as follows.

- FMU-1. *Minimize wildland fire presence*
- FMU-2. *Wildland fire use for resource benefit (maximize wildland fire presence)*
- FMU-3. *Conditional wildland fire use* where fire use for resource benefit is conditional on the reduction of high fuels accumulations to more natural levels

FMU-1 represents BLM and NPS areas where developments exist and in which the AMR required is one that prevents direct threats to life, property, and other values to be protected. Fuels management strategies, including approved prescribed fire and non-fire treatments, may be applied to create defensible space and reduce fuel loads and potential fire-line intensities. Thus, a full range of fuels management strategies can be applied to accomplish site-specific protection objectives.

Given conditions surrounding an initiating fire in FMU-1, management has a range of suppression strategies that can be used to accomplish protection objectives within the unit. For example, in cases where fuels and/or weather are such that fire spread is minimal or away from developed areas, the suppression strategy may include limited action on one flank (i.e., use natural barriers or sparse fuels), whereas a full suppression response is used on other parts of the fire. Strategies will be documented throughout the duration of the fire.

FMU-2 delineates areas in which fire is desired with few constraints to its use. Prescribed fire may be used in specific locations to reduce fuels hazards to more natural levels and create defensible boundaries. The over-arching strategy is to allow fire to serve as a natural disturbance, producing beneficial resource benefits to ecosystems. Managers will be afforded the full range of options for managing natural-caused wildland fires under appropriate response strategies. All fire management operations and on-ground techniques within the wilderness shall be used with the objective of minimizing adverse impacts to the wilderness resource and character. Preference shall be given to the methods, techniques, and equipment that will least alter the wilderness landscape. Established wilderness fire management guidelines will be followed during all wildland fires.

FMU-3 is a "conditional" unit in which fire presence will be maximized (as in FMU-2) at a future point when hazard fuel reduction objectives are met. Initial fire treatments(combined with selective thinning) within this unit would be used to reduce dead and down fuels and selectively thin midstory and understory trees to break up "laddering" potential and continuity. Thus, the potential for sustained (stand-destroying) crownfire will decrease to the point where the natural role of fire is restored as a major disturbance process. The AMR for wildland fires will be determined based on firefighter and public safety and values to be protected, commensurate with least-cost considerations similar to those described for FMU-1 above.

Non-native, invasive plant species are increasing in many locations throughout the planning area according to information based largely on field observation. However, accurate data collection through a formal monitoring program is now under way for both agencies. Although fire may actually favor non-native species such as mullein and pigweed in the short term (Oppenheimer 1978, Potter and Foxx 1984), long-term restoration of fire combined with studies of native plant revegetation should not be constrained where appropriate opportunities exist. After fire re-establishes a natural return cycle within these communities, the native plants that are fire-adapted will likely respond favorably. This dynamic would likely be the same for the no-action alternative, but it may be thwarted under the alternative that emphasizes thinning over fire use. The BLM has established measures under a Noxious Weed Prevention Schedule to prevent the spread of noxious weeds (BLM Instructional Memorandum NM-010-99-01).

Mitigating actions to protect resource values during this interim period will be a major consideration in pre-treatment, implementation, and post-treatment management. All project plans will include direction to protect any identified cultural resources according to established survey and compliance standards and ensure that natural resources and processes are protected adequately. When indicated, cultural and/or natural resource specialists will be assigned to advise on mitigating measures and appropriate on-site minimum impact techniques.

The Joint FMP shall list all applicable laws, policies, and agency guidelines that guide the program. The Plan allows management to integrate program operations such as described above to save taxpayer dollars and maximize the accomplishment of mutual objectives with increased efficiency. Included is an agency-specific, extended year fuels treatment schedule that includes combinations of the strategies described above to accomplish stated resource objectives (see below). The Plan contains a map (see Appendix D) that delineates areas where the three fire management strategies will be used for the immediate future under the preferred alternative. However, under the concept of "adaptive management," the initial units may be revised in the Joint FMP as new resource information becomes available.

For clarification, the term "wildland fire use" (see Appendix A) is defined as the management of naturally ignited wildland fires to accomplish specific, prestated resource objectives in predefined geographic areas (i.e., FMUs). The BLM and NPS recognize wildland fire use principles similar those found in the 1995 "Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide." Specific operational procedures or terminology may differ in some cases. The Joint FMP will outline all relevant guidance that is specifically stated in agency manuals.

All site-specific (i.e., burn plan) project plan objectives and actions will tier from the FMP and EA.

Alternative B: No Action

The "no-action" alternative allows the present management of agency wildland fire and limited fuels treatment programs under separate FMPs to continue.

For the NPS, the 1992 FMP would remain in effect. Under this plan, the NPS is actively engaged in the gradual reintroduction of wildland fire through a planned program of prescribed fire to reduce excessive accumulations of fuels, thin dense forested areas, and suppress wildfires. Although limited treatments (currently averaging less than 200 acres with prescribed fire per year) contribute to a minor degree to mitigating fuels conditions over the long term, they do not address the need for more landscape-scale application of fire (i.e., prescribed fire) and wildland fire use management. Moreover, there is currently little or no coordination of the use of fire across agency boundaries, as discussed below.

Of particular note, resource benefits from an existing program of wildland fire use will be limited under this alternative. Also under the no-action alternative, single-agency management approach, only limited areas would be designated to allow fire to play a more natural role within the Malpais ecosystems. The preferred alternative describes potential wildland fire use (FMU-2) treated acres exceeding what could be accomplished under the no-action alternative. Management boundaries between the NPS and BLM would not be "seamless" as in the preferred alternative, leaving the door open for resource-damaging, higher firefighter exposure, suppression actions along agency fenceline that is, in most cases, not an optimum defensible position.

The BLM recognizes the critical role that fire plays in these ecosystems but will also ensure the protection of human and resource values within agency boundaries. An FMP for the Albuquerque Field Office (1998) contains a general area description and discussion of the preparedness program.

Current levels of treatment of hazardous fuels conditions using limited prescribed fire and mechanical thinning and removal are time-consuming and costly for both agencies; consequently, the potential for high-intensity crownfires would remain for many years under the no-action alternative.

Vegetative dynamics will continue toward degradation, stagnation, and over-growth in many areas. Widespread encroachment of pinyon-juniper, accumulation of surface litter and woody fuels, effects of grazing, and overall increases in stem densities are examples of the current vegetative successional trajectory (i.e., the direction that the system is taking without disturbance). Under present management, this trend will likely continue, leaving vast areas of forest vulnerable to stand-replacing wildfire.

In addition to the build-up of fuels in the forested areas of the Monument and NCA, surrounding private land use patterns are changing (USDI BLM 1999). Communities have grown, and small land subdivisions are now dotting the landscape, increasing the risk of human-caused wildland fire. This emerging condition emphasizes the need for closer coordination between the two agencies to optimize the use of resources to mitigate the potential fire hazard.

Alternative C: Implement Landscape-Level, Non-Fire (Mechanical) Fuels Reduction and Thinning Combined with Suppression of Wildland Fires

Under this alternative, the strategy of prescribed fire would not be used but would be replaced by non-fire treatments using full mechanical thinning, approved chemical treatments, wood removal where authorized, and debris pile burning wherever practical. Wildland fires outside FMU-2 (Wildland Fire Use) would receive a suppression response until thinning and surface fuel reduction applications reduce potential wildland fire intensity, likely far into the future.

Mechanical fuels management would meet all air quality standards for NPS and BLM lands, except where pile burning of debris is preferred. In addition, many cultural resource mitigation measures would be alleviated, with the exception of wildland fires where mitigation protocols would be required and where ground-disturbing wood removal operations are employed. Certain mechanical treatments in designated wilderness and Wilderness Study Areas (WSAs) for both agencies may not qualify under the "minimum tool" requirements. Other treatments may be authorized under agency policies to improve wilderness values. Because of the surface disturbance involved and adverse impacts on wilderness values and esthetics, any thinning debris within the boundaries of wilderness or WSA will likely remain in place for burning. This added surface fuel will contribute to wildland fire surface intensities that may be detrimental to soils and ground organisms during high-severity fire seasons.

A major factor under this alternative is that mechanical treatment methods to accomplish large-scale fuels management objectives on non-wilderness lands are both labor-intensive and expensive to implement. Resource benefits on a large scale would not be realized for decades, if not longer. Moreover, the organic legislation creating both the National Monument and the NCA call for no commercial removal of wood products. From an economic standpoint, there is no incentive for this kind of thinning strategy. The natural consequence of non-commercial thinning is a further build-up in fuels if debris is not piled and burned, chipped and scattered, or physically removed by the agencies. Without prudent fuel management, the fire hazard would increase to dangerous levels that could threaten to destroy thinned stands by high-intensity wildland fire.

Both agency goals speak to (establishing and/or maintaining) "naturally functioning ecosystems" or "natural processes"—key features that cannot remain sustainable without periodic fire disturbance. As such, these goals allow fire use (including prescribed fire) to be integrated across boundaries where appropriate. However, given the undesirable condition of many fuels complexes as described in studies and planning documents, a prudent program of prescribed fire in combination with non-fire treatments is required to reduce fuel hazards to more manageable levels. The extended-year treatment project schedule will be included in the Joint Plan, which identifies priority areas by treatment strategy described under the Preferred Alternative. Thus, a mutual desired future resource condition in all FMUs except FMU-1 (see map "Fire Management Units" in Appendix D) is the full restoration of fire as a natural process with reduced fuel profiles and overall fire hazard and an ecosystem structure and diversity to a more natural range of variability in major vegetative communities.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed by NEPA. This means that based on environmental analysis, the preferred alternative is the one that causes the least damage to the biological and physical environment or the alternative that best protects and enhances natural, historic, and cultural resources. Thus, the environmentally preferred alternative is Alternative A (the joint agency preferred alternative).

The long-term and periodic natural disturbance of fire, as contrasted to its exclusion, will promote principles of sustainable and diverse ecosystems within the planning area for succeeding generations. For this desired future condition to evolve, a regime of short-term management interventions must occur in which altered vegetative communities and high fuels accumulations resulting from decades of fire suppression and human uses can be corrected to a natural range of variability across the landscape. The jointly planned management action in the natural landscape will contribute to firefighter, visitor, and public safety and promote a productive and esthetically desirable environment. High-intensity, stand-replacing wildfires will be replaced gradually by low-intensity surface fires that periodically consume accumulated fuels and maintain visually important openings occupied by native grasses, forbs, and shrubs in a seral condition. Thus, in the long term, wildlife will benefit from increased wildland fire use strategies; the wilderness character and resource will transition to a more natural condition with maximized fire presence; firefighters and the public will be better protected from the consequences of destructive wildlfires; and forest health and sustainability will be enhanced.

ENVIRONMENTAL CONSEQUENCES

This section describes the general setting, provides a list of impact topics to be assessed, and discusses the consequences to each of the selected impact categories for all alternatives. It also contains a discussion of short-term, long-term, and cumulative impacts and mitigation measures where applicable. The ultimate aim of this process is to assist the management of both agencies and to solicit input from cooperators and the public to arrive at a suitable course of action with which to meet identified Joint Plan fire-management-oriented goals.

"Cumulative impact" is defined from Council for Environmental Quality Regulations (§1508.7) and is the impact on the environment that results from the incremental impact of the action when it is added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Thus, the following cumulative impact assessments are not as pertinent as information on direct and indirect impacts, and therefore, a best judgment is applied.

General Setting

The area that is the focus of this assessment lies on the southeastern edge of the Colorado Plateau in western New Mexico. Typical of southwestern landscapes, the El Malpais ("the badlands") is a land of extremes with striking contrasts, including mountains, foothills, mesas, canyons, rugged lava flows and cinder cones, and open ranges. Climatic extremes affect a complex variety of vegetation, and therefore animal distributions, where water availability varies from sparse to relatively abundant over the course of a year. Precipitation averages 12 inches annually.

August is the wettest month with an average of 2.5 inches, and April–May is the driest period (0.35–0.42 inches per year) (USDI, 1999). Temperatures can be equally variable, with the average summer temperature at 70°F and the lowest daily average occurring in January at 32°F.

The NCA and National Monument encompass approximately 376,948 acres (USDI 1999; USDI 1993). This landscape supports a complex pattern of open areas, ponderosa pine forests, pinyon-juniper woodlands, and grasslands. However, most of these vegetative communities have become altered from combinations of human use, early fire suppression, and climate change. The open and park-like stands of pre-settlement ponderosa pine that were maintained by periodic surface fires are now being displaced by increasing densities of competing understories of pinyon-juniper, increasing the potential for disease and damaging crownfire (Schulz 2000).

National Conservation Area

The NCA was established by Public Law (P.L. 100-225) on December 31, 1987. Congressional designation of the area as a "National Conservation Area" requires the BLM to manage the area's resources with a higher order of protection than that followed on other multiple-use lands (USDI BLM 1999).

The NCA encompasses 262,100 acres, with over 90% of this area having common boundaries with El Malpais National Monument. The eastern administrative boundary of the NCA is bounded by the Acoma Reservation; the north is bounded by a checkerboard of private, National Park Service, and Forest Service lands; the west is bounded by the Ramah Indian Reservation and private tracts; and the south is bounded by private lands.

The NCA itself is physically bounded on the east by high sandstone cliffs and bluffs and on the west by the "Chain of Craters." It is characterized as a stark landscape of volcanic history. Seven different lava flows have occurred over the past 500,000 years.

A significant administrative designation affecting the fire program is wilderness. The Chain of Craters WSA contains 18,300 acres and currently is being assessed for full wilderness designation. The Cebolla Wilderness encompasses approximately 62,000 acres (of which 300 acres are private and 200 acres are tribal lands) and is located along the east side of State Route 117 from the "Narrows" to County Road 41. The West Malpais Wilderness is located south and west of El Malpais National Monument and north and east of County Road 42 with a total area (except for 500 acres of private land) under wilderness management of 39,800 acres (USDI BLM 1999).

National Monument

The National Monument, also established through public law (P.L. 100-225, Section 101) on December 31, 1987, designated a 114,000-acre tract to protect highly significant natural and cultural features. An additional 4848 acres were transferred from the Cibola National Forest (Section 103). Section 104 directed that grazing privileges within the Monument were to end on January 1, 1998.

It should be noted that the monument is nearly completely surrounded by NCA lands. The exception is the northern administrative boundary, where it meets private lands on the west, Cibola National Forest on the north, and a checkerboard of BLM and private lands on the northeast.

IMPACT TOPICS INCLUDED IN THIS ENVIRONMENTAL ASSESSMENT

The impact topics selected for analysis here were derived from the IDT process. Among the impact topics are those required by law or legal statute and public input from informal contacts and prior public meetings dealing with a variety of resource issues.

Natural Resources

- Wildlife
- Threatened/Endangered Species
- Vegetation

- Soils
- Water, Wetlands, and Riparian
- Wilderness
- Air Quality

Cultural Resources

- Cultural Resources
- American Indian Uses and Traditional Cultural Practices

Socioeconomics

- Socioeconomics
- Recreation

IMPACT TOPICS CONSIDERED BUT NOT ADDRESSED FURTHER

One impact topic considered but not further addressed is aesthetics (the BLM's "Visual Resource Management"). The NPS routinely considers this element in NEPA documentation. However, the fundamental component of aesthetics ("Visual Resource Management") is the visual quality of the landscape; this is addressed under recreation and mentioned under several other topics where mitigation measures can address any impacts on the visual landscape from fire and/or non-fire treatments.

Land ownership, particularly locally, was considered but not addressed further. The reasoning for this action was that most land owners (whether seasonal or permanent residents) in the rural areas bordering agency lands will be benefited by the joint agency fuels management program in the long term. Short-term impacts may include smoke in the area, but this was addressed under the air quality impact topic.

Environmental justice, based on Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" directs federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. Consideration of this impact topic was based on the fact that many minority and/or low-income populations, particularly in rural Cibola County, are employed during fire season by both agencies. The majority of impacts resulting from the joint fire management program will be beneficial economically and, in the long-term, environmentally, to minority and low-income populations.

COMPLIANCE AND AUTHORITY FOR ACTION

In addition to the citations listed under "Impact Topics" above, Appendix C lists the legal and statutory authorities necessary to implement any alternative described in this document.

NATURAL RESOURCES

Wildlife

Affected environment

The wide variety of ecotypes represented by the two agency ownerships supports diverse populations of animals, including over 30 species of mammals; more than 295 species of birds for at least part of the year; and many species of reptiles, amphibians, and invertebrates (USDI BLM 1999).

Major species include mule deer, pronghorn, black bear, bobcat, coyote, grey fox, mountain lion, Abert squirrel, turkey, and band-tail pigeon. Rocky Mountain elk reside mainly in the ponderosa pine forest habitats of the Cebolla

Wilderness and Chain of Craters WSA. The eastern bluffs (NCA) support a raptor population that includes golden eagle, red-tailed hawk, and prairie falcon. Upland game birds include mourning dove, quail, and turkey. Many collapsed lava tubes provide habitat for kestrels and great horned owls (USDI BLM 1992; USDI NPS 1993).

It should be noted that many species listed above use habitats created by past fires, particularly old prescribed burns on El Malpais National Monument that are now more open with a richer array of understory forage species. The overstory in these low-intensity, surface-burned areas provides needed thermal and hiding cover for mule deer. Turkey require species such as oaks for food and a relatively dense herbaceous layer; however, water sources are key limiting factors for turkey and many other species listed above. Abert squirrels prefer relatively dense, interlocking canopy cover with mature trees that produce cones and seeds, along with inner bark of new growth twigs on ponderosa pines (Covington et al. 1997).

Methodology

All available information on known natural resources was compiled. Predictions about short- and long-term site impacts are based on previous studies, completed monitoring, and expertise from resource specialists. The intensity of effects is described below.

Negligible: An action that would cause a change to a population or individuals of a species or a natural physical resource, but the change would be so small that it would not be of any measurable or perceptible impact on the population.

Minor: An action that would cause a change to a population or individuals of a species or a natural physical resource, but the change would be small, and, if it is measurable, it would be a small and localized impact on the population.

Moderate: An action that would cause some change to a population or individuals of a species or a natural physical resource. The change would be measurable and would have a impact on the population but would be more localized.

Major: An action that would cause a noticeable change to a population or individuals of a species or a natural physical resource. The change would be measurable and would have a substantial and possibly permanent impact on the population.

Regulations and policies

The Public Rangelands Improvement Act of 1973 and the Sikes Act of 1960 direct the BLM to provide for improved management of wildlife habitat to meet wildlife needs in the face of increasing demands for basic energy supplies, building materials, and food products (USDI 1992). The NPS is directed by the General Management Plan (1990), which requires the preparation of "wildlife resources management plans" prepared "in close consultation with appropriate departments of the State of New Mexico and using previous studies of the area."

Impacts of Alternative A (Preferred Action)

Short-term impacts to some wildlife species include negligible to minor disturbances from human and equipment presence during wildland or prescribed fire operations and infrequent, minor disturbance in breeding activity during the early part of the fire season as a result of human presence. Small mammal cover will be exposed over localized areas, which benefits predator species. Within two growing seasons post-burn, particularly with wet years, sprouting and general regrowth of grasses, forbs, and shrubs will moderately enhance habitat conditions for many species of wildlife.

Long-term beneficial impacts include a moderate increase in species diversity and overall species resiliency as treated vegetative communities become further re-established with healthy young growth. Where non-native, invasive and/or toxic weeds are not present, former de-watered springs or seeps may be improved for wildlife use where thinning and surface fuels have been reduced from fire or a combination of fire and mechanical thinning under the preferred alternative.

For the vast ponderosa pine ecosystem, the reintroduction of fire into the present-day (ponderosa) forest has the potential to greatly change the frequency and distribution of key wildlife habitat components such as snags, downed

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logs, old trees, and large oaks (*Quercus spp.*). Snags are an important component and need to be present in appropriate densities in forested ecosystems for cavity-nesting birds. Downed logs are important to small mammals, and post-burn colonizing oaks provide habitat for birds, bats, ungulates, and small mammals. In areas where snags are important to retain as wildlife habitat, a mitigation tool to protect selected snags appears to be lining (Randall-Parker & Miller 1999). Therefore, a major benefit can result for wildlife in the ponderosa pine association through the long-term and periodic presence of low-intensity fire.

Mitigating measures include adjusting thinning and prescribed fire prescriptions to allow for low-intensity surface fire, ensuring that appropriate treatment areas are arranged to maximize edge effect, and provide for adequate cover and travel corridors as well as snags and logs described above. Cave fauna may require specific protection measures to mitigate the impacts from wildland and prescribed fire, such as selective thinning and fuels removal in and around cave entrances.

The strategies of wildland fire use and prescribed fire in combination with mechanical fuel reduction and prudent application of mitigating actions, such as minimizing ground disturbance, will result in moderate beneficial short-term and moderate to major long-term beneficial impacts to habitats. The fire-effects monitoring program is now firmly established within El Malpais National Monument, and a monitoring program is being planned for BLM lands. This strategy will further reveal relationships between fire use and wildlife habitat trends over time.

Cumulative Effects

Impacts resulting from incremental past, present, and reasonably foreseeable future fire management activities combined with other administrative actions in the planning area under the preferred alternative will generally be beneficial to wildlife, especially as habitat has been and will be improved with fire and non-fire treatments. Human movements around wildlife may be temporarily disrupting.

Conclusion

Minor to moderate short-term and major long-term beneficial impacts will be realized from the implementation of the preferred alternative. When the natural role of wildland fire is again restored to the fire-adapted ecosystems of the Malpais, the habitat variety and diversity of plant communities will increase. Thus, wildlife will benefit from increased nutritional quality and availability of forage.

No minor, moderate, or major adverse impacts will result in the short term or long term from implementation of the preferred alternative.

Impacts of Alternative B (No Action)

In the short-term, BLM and NPS lands will continue to see impacts such as the spread of unwanted plants; the beginnings of a reduction in fire-dependent species; and an increase in tree densities, surface fuels, and laddering, which may exacerbate crownfire conditions. Similarly, but to a lesser degree with the current FMPs, disturbance to breeding habitat is likely.

Long-term impacts would be the continued shift to fire-intolerant, non-native vegetation that ultimately will change the structure and function of vegetative communities. This will result in a minor to moderate adverse impact on the diversity of wildlife that previously relied on the native plants. Also, as open-canopy habitats become unnaturally closed in the absence of natural disturbance fire events, the diversity of wildlife that use those habitats again will decrease.

Cumulative Effects

The geographic area affected is the entire planning area. There will be only a minor adverse cumulative effect when the incremental impacts of the past management practices including fire suppression actions are added to potential future fire management activities. The impacts to wildlife habitat will be detectable but slight, primarily through the interruption of movement from human presence.

Conclusion

Under the no-action alternative, current management will impact wildlife and habitat to a minor-to-moderate intensity over the short and long term as a result of the continued limited role of fire as a natural disturbance process within these fire-dependent systems.

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Impacts of Alternative C

The net short-term effect of this alternative is high levels of human presence in areas occupied by wildlife. Animals, including large ungulates and their predator populations, may become temporarily displaced from normal range. Noise from vehicles, saws, and other equipment used in thinning operations would be a minor, adverse, short-term impact.

The long-term effects are a continued gradual reduction in species diversity and preferred forage for wildlife without natural fire to recycle important biochemicals into poor soils and stimulate native seed germination in fire-dependent species. Mechanical thinning, without follow-up prescribed fire treatments, will result in minor benefits such as opening canopy in local areas to sunlight and limited increases in plant diversity as a result.

Cumulative Effects

Cumulative adverse effects would likely be minor, mainly associated with human presence in that portion of identified habitat within the planning area resulting from increased suppression actions, thinning operations, and wood removal in authorized areas. All of these activities can interrupt breeding cycles and foraging habits and cut off migration corridors across the planning area.

Conclusion

The implementation of this alternative, without appropriate timing of human presence and other mitigating measures, will have a minor adverse affect on wildlife and/or habitat over the short-term and a minor benefit over the long-term.

Threatened, Endangered, and Special-Status Species

Affected environment

Six federally listed threatened or endangered, one preferred threatened, twenty-five species of concern (BLM sensitive), and seven State of New Mexico threatened or endangered species are known to or potentially could occur on public lands within Cibola County (USDI, FWS 2000, NMDG&F 1998, Sivinski and Lightfoot 1995). However, because of the land ownership patterns and the specific habitats used by these species, they may occur within the broad borders of Cibola County but not occur on lands administered by the El Malpais National Monument or the El Malpais NCA species lists. Species lists for each agency are provided in management and NEPA documents referenced throughout this section.

Listed and species of concern that are known to occur include the bald eagle, peregrine falcon, and mountain plover. The American peregrine falcon is known to nest within the planning area, and the Arctic sub-species is likely to pass through the area during spring and fall migration. The mountain plover was identified in a 1995 survey by the New Mexico Department of Game and Fish (NM DG&F) as using the southern portion of the area. Also, the Townsends big-eared bat [pale Townsend's (=Western) big-eared bat, *Plecotus townsendii pallescens*] has been observed within lava tube caves on El Malpais National Monument and is listed as a species of concern (USDI 1999).

The following listed and species of concern could potentially occur within Cibola County but have not been documented on either agencies lands.

- Black-footed ferret *(Mustela nigripes)* (endangered)
- Southwestern willow flycatcher (*Empidonax trailii extimus)* (endangered)
- Mexican spotted owl (*Strix occidentalis lucida)* (threatened)
- Spotted bat (*Euderma maculatum)* (species of concern)

Because suitable riparian and old-growth forest habitats are lacking, neither the flycatcher nor the Mexican spotted owl are likely to be found within the area (USDI BLM & NPS 1999). The most recent information from the US Fish and Wildlife Service (FWS) (USDI FWS 1989) indicates that prairie dog towns of the following sizes are necessary to maintain a black-footed ferret population: (a) 80 acres for black-tailed prairie dogs and (b) 200 acres for Gunnison's prairie dogs. Within the planning area, no prairie dog colonies of a size necessary to support black-footed ferrets have been identified. The best information available indicates that the black-footed ferret is extirpated from the wild in New Mexico (NMDG&F 1996).

Methodology
In consultation with the FWS, a list of all current and preferred species was reviewed. The following evaluation applies to both agencies as a result of their boundary proximity and landscape similarities, regardless of documented observations for only one agency.

The results of the analyses are described for each listed species (threatened, endangered, or species of concern) as "may affect" or "no effect." If any action is determined to be a "may affect," a further determination is made as to "likely to adversely effect" or "not likely to adversely affect" a species under consideration.

Regulations and policies
The Endangered Species Act of 1973, as amended, directs the FWS to evaluate, assess, list, and coordinate recovery when needed species of plants and animals that have reached or may reach a biological threshold beyond which the species may become extirpated. States also establish and maintain a listing of plants and animals that are at risk statewide of extirpation.

Animals—Threatened (T) and Endangered (E) Species and Species of Concern (SC)

Impacts of Alternatives A, B, and C

- **Southwestern willow flycatcher (*Empidonax traillii extimus*) (E)**
  Because suitable riparian habitats are lacking, the southwestern willow flycatcher is not likely to be found within the area. However, the following assessment applies to potential species habitat in the planning area whether it is occupied or not.

  Cumulative Effects
  The geographic area affected is the habitat of the species. Under all alternatives considered, cumulative activities (i.e., human presence, routine administrative activities, and fire management activities) may affect but are not likely to adversely affect the species if routine protective measures are followed.

  Conclusion
  Short-term and long-term effects to the species habitat are improved cover, species diversity, and overall health. Under the preferred alternative, negligible adverse short-term, long-term or cumulative impacts will occur, but moderate benefits can be realized from prudent fuels management strategies under the preferred alternative.

- **Black-footed ferret (*Mustela nigripes*) (E)**
  There have been no documented sightings of black-footed ferrets in either the Monument or NCA, and it is considered to be extirpated from New Mexico (NM DG&F 1996).

  Conclusion
  A determination of no affect to the species over the short term or long term or cumulatively from all alternatives.

- **American bald eagle (*Haliaeetus leucocephalus*) (T)**
  The species is thought to be transient through the NCA and Monument, given sighting information (USDI NPS 1997) and the lack of large bodies of water, such as the Rio Grande corridor, used by the eagle for foraging fish.

  Conclusion
  There will be no effects short term or long term or cumulatively on either the species or the habitat from any strategies preferred or listed under Alternatives A, B, or C.

- **Mexican spotted owl (*Strix occidentalis lucida*) (T)**
  There have been no documented sightings within the monument (USDI 1997). Based on informal consultation with the FWS, it is concluded that the mixed conifer and ponderosa pine/gambel oak habitat within the Monument does not contain the needed structural characteristics (species composition, density, or aspect). It was

determined that the (FMP) for El Malpais National Monument may affect, but is not likely to adversely affect, the owl or its habitat (USDI 2000).

Note: Although there are no documented sightings to date, the NPS charge is to manage all potential habitat as if occupied. There is conifer forest in the Lost Woman Area that may support owls. However, the species prefers the added protection afforded by cliff ledges, witches-broom, and caves, particularly under mature canopy.

From an impact mitigation perspective, there are several existing reasonable and prudent measures to minimize any impacts to the Owls or their habitat. They are as follows.

- All prescribed fire burn plans for the NPS are reviewed by the Chief, Resource Management (El Malpais NM) before approval; and if indicated, a biologist will be assigned as a resource advisor to the prescribed burn boss;
- The FWS will be notified for emergency consultation of any unwanted wildland fire (including escaped prescribed fires) that may threaten to enter potential habitat;

Cumulative effects
The geographic area affected is primarily identified species habitat described in the affected environment. The Cumulative effects of other management activities, either past, present, or future, may affect but are not likely to adversely affect the species or habitat characteristics for all alternatives considered.

Conclusion
Given the mitigation measures described above, implementation of the Preferred Alternative (A), the No-Action Alternative (B) or the third Alternative (C) would result in a "May Affect-Not Likely to Adversely Affect" determination for the species or habitat.

Animals—Species of Concern (SC)

Species known to occur within the NCA (and NPS area) include the American peregrine falcon (*Falco peregrinus anatum)* (Anderson 1997), the Western burrowing owl (*Athene cunicularia hypugea)* (USDI 1999),the loggerhead shrike (*Lanius ludovicianus)*(USDI 1999), and the ferruginous hawk (*Buteo regalis)* (USDI 1999). Because of the predominant (BLM) grass-shrub community habitat, no potential for significant adverse impacts to these species exists under Alternative A, B, or C. However, under the preferred alternative (A), significant benefits to prey habitat for these species will result in the long term from joint agency fire use and prescribed fire programs. Herbaceous plant cover will increase across the landscape, providing rodent and bird feed (seeds) that in turn benefit the raptor food supplies.

- **Townsend's (=Western) big-eared bat (*Plecotus townsendii pallescens)* (SC)**

Impacts of Alternatives A, B, AND C
This species of concern occupies several lava tubes throughout the planning area. As such, any (wildland or prescribed fire) presence near the sensitive openings may result in undesirable impacts from all alternatives listed.

Although heat from a fire over the top of the lava tube would have little effect, a fire in the entrance area of the lava tube, especially at Lava Wall, might lead to some melting of ice in the entrance. This could, during dry periods, enhance water availability for certain biota, including the bat. Other by-products of fire—particulates, and smoke/particulates—might enter the cave. If a chimney effect exists (such as the second entrance in Lava Wall), smoke and particulates may be pulled inside, affecting any bats present. However, based on assumptions concerning how the by-products of fire will behave, it is believed that the effects of fire over the surface of a lava tube will be minimal (Ingham, Northup, and Welbourn 1996).

Cumulative effects
The geographic area affected is the identified species habitat described in reports on file at El Malpais National Monument. Under all alternatives, and considering other past, present, and no anticipated future activities in the

affected area, it is determined that cumulative actions may affect but not likely to adversely affect the species or habitat.

Conclusion
In the short term or long term, activities under all alternatives may affect but are not likely to adversely affect the species or habitat if routine protective measures are taken.

- **Spotted bat (*Euderma maculatum*) (SC)**

Impacts of Alternatives A, B, and C
Spotted bats are rare but may occur in the monument. The presence of streams and nearby cliffs or steep hillsides with loose rocks may be habitat for this bat (Alexander 1997).

Given that there have been documented sightings in Cibola County but not in the Monument, the assessment will consider the species under all alternatives.

Cumulative effects
Under all alternatives considered, cumulative effects may affect but are not likely to adversely affect the species if routine protective measures are followed.

Conclusion
Under Alternatives A, B, and C, that there will be no effect short term or long term on the species or habitat resulting from actions described. However, there may be minor beneficial impacts to the habitat that supports the food supply (water-borne insects), resulting in the long-term fire effect of increasing water availability. Long-term monitoring would be required to substantiate the previous statement.

Listed Plants

Listed plant species that potentially occur within the area but have not been confirmed are the Zuni fleabane and puzzle sunflower. These have been confirmed outside the NCA boundaries to date (USDI BLM 1999). Species of concern that are known to occur within the NCA include the Acoma fleabane and Cinder Phacelia (Ladyman 1998). The Cinder Phacelia has been found growing on Cerro Brillante, Cerro Hueco, and Cerro Americana (Ladyman 1998).

The Cinder Phacelia (*Phacelia serrata*) has been found growing on cinders in the Bandera Crater area (USDI NPS 1999) and is listed as a species of concern. The Wright's fishhook cactus, *Mammillaria wrightii wrightii* or *Sclerocactus wrightiae*, was identified growing on sandy and alluvial soils at several locations in both the Bandera and Sandstone Bluffs districts. This includes along upper NM 53, the west Zuni-Acoma trailhead, the North Pasture, and the North Pasture sandstone ridge areas. This plant is found only in New Mexico and appears on both the federal and state endangered plant lists.

- **Cinder Phacelia (*Phacelia serrata*) (R)**
  Cinder cones support light fuels to mostly cinders, and wildland fire or prescribed fire under all alternatives will likely be very low intensity. A similar statement can be made regarding the plant that occurs on Cerro Brillante (Ladyman 1998). Thinning or mechanical fuels reduction projects are not likely within this habitat because of the sparse, light fuels concentrations.

Cumulative effects
The affected area is described above. The presence of foot traffic on the cinder cones, combined with the future potential of non-native plant establishment and spread in the area, may cumulatively affect but is not likely to adversely affect, the species habitat of the Cinder phacelia. Aggressive weed species monitoring identification and restriction of visitor and other foot travel (including fire personnel) in known or suspected habitat are mitigating measures to be considered for the protection of the plant.

Conclusion

Under all alternatives listed, short term, long -term or cumulative effects may affect but are not likely to adversely affect the species or habitat if routine protection measures are taken.

- **Wright's fishhook cactus (*Mammillaria wrightii*) (E)**

  This species is on both the federal and state endangered plant list, but is now under review for delisting. Under all alternatives (A, B, C), any planned prescribed fires and/or thinning or mechanical fuel reduction work in the Bandera and Sandstone Bluffs districts of El Malpais NM will require a pre-treatment area survey to locate any individual plants and provide for protection during the project.

  Cumulative effects

  As with many listed plants, there are risks to the species and/or identified habitat as a result of human presence. Mitigation to prevent adverse cumulative effects would include monitoring, identification of non-native competing vegetation in the area, and restriction of foot travel. Therefore, cumulative actions including all alternatives considered may affect but are not likely to adversely affect the species.

  Conclusion

  With appropriate mitigating measures employed (see above) to protect this species, the actions described under all alternatives listed may affect but are not likely to adversely affect the species in the short-term or long-term.

Vegetation

Affected environment

The total land area under management by the two agencies supports a wealth of grassland, woodland, and upland vegetation.

The BLM completed a vegetation study of the El Malpais National Monument and National Conservation Area in 1989. A selective vegetation inventory conducted by the University of New Mexico (1995) has brought the identified number of species of terrestrial plants within the Monument to approximately 651 (USDI NPS 1997).

Bleakly (1994) lists and describes 424 species of vascular plant taxa found in the malpais area, including a relationship description between substrate type and floral characteristics. Bleakly (1994) also identified five similar plant community types: mixed conifer, shrub/conifer (pinyon-juniper woodland), grass or grass/shrub, bare to sparse grass/shrub, and ice cave entrances. The NPS recognizes six vegetation types: Douglas-fir/Rocky Mountain juniper/ponderosa pine, ponderosa pine/native grasses, dwarf ponderosa pine/one-seed juniper/pinyon/Apache plume, ponderosa pine savanna, blue grama grassland, and pinyon-juniper woodland.

With exception of exotic and noxious plants, all vegetative communities in the NCA and NM generally have evolved with periodic, low-intensity fire and will benefit from periodic fire in the future. The potential for noxious weeds and other non-native plants to colonize areas disturbed by fire remains problematic; however, observational monitoring in ponderosa pine and pinyon-juniper communities indicates that some primary invaders have been shown to decrease in density (for example, mullein) as native grasses re-establish over several years post-burn (Jacobs, personal comm.). Other established non-native plants are subject to restriction through an integrated pest management program that uses biological, chemical, and mechanical control. The potential for spread of these species is related to the availability of seed and surface disturbance for germination. Activities that significantly disturb the soil surface include thinning and wood removal activities and high-severity wildland fire.

Methodology

The intensity of the effects is described in the analysis below using the terminology found under other selected impact topics of this document. For convenience, the terms and definitions are repeated below

Negligible: An action that could cause a change to a vegetative community or population of individuals of a species, but the change would be so small that it would not be of any measurable or perceptible consequence to the population.

Minor:	An action that could cause a change to a vegetative community or population of individuals of a species, but the change would be small and, if it is measurable, it would be a small and localized consequence to the population.
Moderate:	An action that would cause some change to a vegetative community or population or individuals of a species. The change would be measurable and would have a noticeable consequence to the population but would be more localized.
Major:	An action that would cause a noticeable change to a vegetative community or population or individuals of a species. The change would be measurable and would have a substantial and possible permanent consequence to the population.

Regulations and policies

Public Domain Forest Management Policy (1989) furnishes guidelines for (BLM) management on forest and woodlands. The National Park Service Organic Act (1916) and the El Malpais National Monument and NCA Organic Act (PL 100-225) direct both agencies to ". . . preserve . . . the area . . . and other significant natural and cultural resources . . . ."

Impacts of Alternative A (Preferred Action)

Short-term impacts, under the strategies of wildland fire use for resource benefit and using a combination mechanical treatment and prescribed fire application, would be minor loss of individual plants through normal mortality. This effect is desirable to promote thinning of overstocked understory trees and shrubs. Most native plant associations are adapted to the effects of periodic surface fires, and the ponderosa pine forests of the southwest have been studied extensively (Potter and Foxx 1984, Wright and Bailey 1982, Grissino-Mayer and Swetnam, personal communication). Consequently, short-term impacts (2 to 3 years post-burn) to vegetation in the planning area from the preferred alternative are the creation of vegetative mosaic patterns favoring an open overstory and a perennial herbaceous-native forb understory, creating a moderate to major beneficial effect.

Long-term impacts (3 years post-burn and beyond) include more pronounced increases in species richness, diversity, and resiliency, with a tendency toward fire-tolerant plant species increases across affected landscape. Under the preferred alternative, re-entries with fire will continue to encourage a structural mosaic of diverse plant associations. Weedy plants tend to be poor competitors, and over time, are generally replaced by long-lived perennial plants, especially as nutrients increase through cycling.

Cumulative Effects

The affected geographic area is generally the entire planning area and specifically those portions of the above-described FMUs that support vegetation capable of carrying fire.

The cumulative impacts of previous and potential future fire suppression operations (vehicle compaction, fireline construction, etc.) and mechanical fuels reduction and prescribed fire activities will gradually become minor to negligible as suppression actions are decreased with decreasing fuels across the landscape under the preferred alternative. Moreover, it is anticipated that other management activities or uses, particularly on wilderness and parklands, will affect but not likely adversely affect vegetation in the planning area under the preferred alternative.

Conclusion

Under the preferred alternative (A), the short-term and long-term impacts will result in moderate to major benefits to vegetation in the planning area.

Impacts of Alternative B (No Action)

Short-term impacts include higher, more undesirable degrees of plant mortality from high-severity fires on or near agency boundaries as a result of lack of coordination in planning.

Long-term effects, under a continued management with no changes in joint planning and coordination, result in fuels accumulations may lead to continuing increases potential for large, high-intensity wildland fires.

Cumulative Effects

The affected geographic area is essentially the same as for the other alternatives. The cumulative effects from the no-action alternative are estimated to be generally similar to that for the preferred alternative; the exception is that limited prescribed fires and fuels management activities by individual agencies under current plans may tend to allow fuels and vegetation to become a wildland fire hazard during severe seasons.

Conclusion

It is determined that minor short-term and long-term adverse effects will occur under the no-action alternative.

Impacts of Alternative C

Short-term impacts under a mechanical treatment strategy are mortality/damage from high-intensity wildland fires and possible stimulation of fire-intolerant species without periodic fire being applied across the landscape. Minor to moderate soil disturbance may adversely impact vegetation through up-rooting, crushing, and trampling.

Under a mechanical treatment regime with pile burning, the long-term impacts are lack of nutrient recycling and continued increases in exotic plant associations without periodic prescribed fire treatments. Also, soils could be adversely impacted in locations where piles were burned through sterilization. Vegetative re-colonization on these scorched sites will take a very long time.

Cumulative Effects

The affected geographic area considered is the same as that described for the other alternatives. Cumulative effects under the mechanical treatment alternative, in view of few other planned administrative actions, include added fuel and petrochemical spills or leaks from vehicular traffic in and out of project areas. Trash and human waste will likely increase, and noise levels from chainsaws may impact wilderness and park users under this alternative. Therefore, minor adverse cumulative effects to vegetation are anticipated under this alternative.

Conclusion

In summary, the short-term impacts to vegetation will be moderately adverse in project localities as a result of human presence and mechanical work; long-term impacts to vegetation also will be moderately adverse from increased soils sterilization and the lack of adequate nutrient cycling provided by periodic low-intensity fire from wildland fire use and prescribed fire strategies.

Soils

Affected environment

The geologic history of this landscape is one of fire. Five major lava flows give the malpais area its unique characteristics, which in turn influence soils formation and vegetative distribution. The differential age-classes of the flows result in a diversity of soils that allow grasslands, woodlands, and forests to grow in various developmental stages (Grissino-Mayer 1995). The well-developed soils occur in the southern and western portions of the malpais; the northern portion of El Malpais National Monument is an example of more recent activity such as the El Calderon Lava Flow. This flow is covered largely with alluvium that supports both grasslands and forest. Another recent flow originating at Bandera Crater, with its pahoehoe ("ropey") lava, also supports vegetation but with more shallow soils. The youngest flow (named McCarty's) has very little soil development and therefore sparse vegetative cover.

Another unique feature of these flows is the numerous kipukas, or "islands," of substrate material surrounded by more recent lava flow (Lindsey 1951). These soils support patches of relict vegetation that have been isolated from human uses and therefore are ecologically important (Grissino-Mayer 1995).

Methodology

The intensity of effects are described in the analysis below using terminology found under other selected impact topics of this document, and are repeated here:

Negligible: An action that could cause a change to a soils resource (chemical, biological or physical), but the change would be so small that it would not be of any measurable or perceptible consequence to the resource.

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Minor: An action that could cause a change to a soils resource (chemical, biological or physical), but the change would be small and, if it is measurable, it would be a small and localized consequence to the resource.

Moderate: An action that would cause some change to a soils resource (chemical, biological or physical). The change would be measurable and would have a sufficient consequence to the soils resource but would be more localized.

Major: An action that would cause a noticeable change to a soils resource (chemical, biological or physical). The change would be measurable and would have a substantial and possible permanent consequence to the soils resource.

Regulations and policies

Refer to the Draft El Malpais Plan and Environmental Impact Statement (1999) and the General Management Plan and Environmental Assessment, Wilderness Suitability Study, El Malpais National Monument (Draft 1980).

Impacts of Alternative A (Preferred Action)

Under the preferred alternative, soils may experience short-term disturbance in areas where fuels are being mechanically treated, and possible sudden increases in nutrient charge to soils from prescribed fire ash. Such increases may provide favorable conditions for many plant species, nitrogen-fixing microbes, and nitrifying bacteria. Water infiltration capability can be enhanced in areas where native herbaceous plants have established after surface fires. Additionally, soil micro-organisms (i.e., fungi and bacteria) that interact with root systems of woody and herbaceous plants create symbiotic relationships. Studies have shown that low-intensity fire can reduce the incidence of some forest tree root pathogens such as fomes root-rot. Conversely, beneficial soil fungi (mychorrizae) that help trees take up nutrients and moisture may be adversely affected by high-severity fire.

Soil and microclimatic conditions following fire also favor establishment and growth of native herbaceous and shrub species. Negligible adverse impacts to soils or soil properties are anticipated under the preferred alternative.

Long-term impacts to soils will be largely increased productivity and subsequent plant diversity. For several years following low-intensity surface fire, the generally warmer soil temperatures may increase soil microbial activity. If wildland-fire-use fires and prescribed fires are kept to low intensity and on the ground surface, then it is anticipated that moderate to major benefits to soils and soil chemistry/nutrients will result.

Cumulative Effects

The affected area considered is essentially that which supports fire-carrying vegetation. Cumulative impacts under the preferred alternative are minor compaction from recreation/wilderness users and some limited vehicle use. However, as fire is restored to a more natural role over the long term, vehicle use for fuels management and related wildland fire projects will decline, offsetting impacts from non-fire related activities. Therefore, cumulative adverse effects are predicted to be negligible.

Conclusion

Under the preferred alternative, soils will trend toward moderate beneficial impacts with negligible adverse effects short-term. With the long-term goal under this alternative of restoration of periodic low-intensity surface-type wildland fires with occasional maintenance prescribed fires, the long-term benefits have the potential to be major from the re-establishment of a fire-driven nutrient cycle and increased stability of the soil strata given increased native herbaceous ground cover.

Impacts of Alternative B (No Action)

Short-term impacts to soils would be similar to the preferred alternative, except for those activities affecting smaller project areas. Mechanical fuels management would likely have negligible adverse impacts, including activities on moderate slopes. It is not anticipated that soils productivity and overall stability will be adversely affected in the short term from limited prescribed fires and/or limited opportunities for joint agency projects involving fuels reduction or wildland fire management activities across boundaries.

The long-term impacts of the no-action alternative are essentially what is occurring from current fire management activities. Without a formal monitoring program in place to track impacts to the soil resource, only empirical knowledge can be used as the basis for predicting effects. However, soil stability and the relative productivity of soils in prescribed fire treatment areas appears good and is likely to remain so into the future. However, there will be short-term and long-term risks of erosion resulting from decreased vegetative cover after high-intensity fires, particularly on those lands where slope is steep and/or following intense rainfall events. Soil cover may decrease in these cases.

Cumulative Effects

Cumulative impacts to soils resources will be similar to described under the preferred alternative, especially considering increases in human presence within the planning area. However, high-intensity wildland fires resulting from continued fuels buildups are more probable under the no-action alternative and would likely result in more severe impacts to soils stability if mitigating measures (rehabilitation, restricted access to vulnerable areas such as pinyon-juniper woodland where surface cover has been removed, etc.) are not applied in a timely manner. It is anticipated that under the no-action alternative, adverse soils effects will be moderate in areas where vegetative cover is sparse and soil stability is being impacted by cumulative public presence or agency management activities.

Conclusion

It is determined that under the no-action alternative, that minor to moderate short-term and long-term adverse effects will occur to the soils resource from higher severity wildland fires.

Impacts of Alternative C

Under a largely pure thinning regime, soils can be disturbed physically and biologically from fuels management activities such as dragging materials, scouring, and pile burning (soil sterilization). Without prescribed fire as a tool of management to consume debris from mechanical thinning and slashing across a wide area, the short-term impacts would relate primarily to ground disturbance.

Long-term impacts to soils would likely be improved soil stability as fuels are mechanically removed from a site, but a long-term decreased productivity would occur from lack of ash and chemical nutrient deposition without the cycling effects of low intensity fire.

Cumulative Effects

Given the limited role of fire under this alternative, it is predicted that soils may become less fertile for healthy and vigorous vegetative growth. Thus, cumulative adverse effects to the overall soils resource in areas where fuels management activities are planned will tend to be moderate with time.

Conclusion

Under Alternative C, short-term adverse effects will be minor and long-term adverse impacts are predicted to be moderate.

Water, Wetlands, and Riparian Environment

Affected environment

Water sources, wetlands, and riparian areas are few across the landscape. The BLM is required to manage grazing permits to protect surface waters to the extent possible. The only habitats in the area considered as ephemeral wetlands are playa lakes, which are temporary and dependent on annual precipitation. When surface water is available, waterfowl use these sites for feeding and resting during migration.

Cebolla Creek is known to have a perennial flow for approximately 5 miles within the NCA.

Methodology

Available information on water sources, wetlands, and riparian resources is from current approved agency environmental and management plans and documents, which are listed in the Reference section.

The intensity of effects is described in the analysis below using terminology found under other selected impact topics of this document. They are repeated here for convenience.

Negligible: An action that could cause a change to the biological, chemical or physical character of water, wetlands, and/or riparian resources, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could cause a change to the biological, chemical or physical character of water, wetlands, and/or riparian resources, but the change would be small and, if it is measurable, it would be a small and localized consequence.

Moderate: An action that would cause some change to the water, wetlands, and/or riparian resource. The change would be measurable and would have a sufficient consequence to the resource but would be more localized.

Major: An action that would cause a noticeable change to the water, wetlands, and/or riparian resource. The change would be measurable and would have a substantial and possible permanent consequence.

Regulations and policies

The BLM and NPS policies require protection of water resources consistent with the Clean Water Act. Water quality and quantity may be affected by management activities related to wildland fire and therefore are listed as an impact topic. Floodplains and wetlands are also included in this analysis.

Effects under all alternatives (including Preferred)

Short-term impacts from any limited thinning/prescribed fire-combination treatments in some riparian areas would be beneficial under Alternatives A and B if appropriate protective measures are applied. These may include allowing streamside vegetation to remain, providing shade where it currently exists. Adverse effects from any mechanical fuels reduction would be negligible in the short term. Wildland fires in these areas are likely to be short-lived, very patchy, and of low intensity. Therefore, adverse effects to wetlands and riparian resources in the short term would be negligible under any alternative.

In the long-term, with limited thinning and the application of low-intensity fire under Alternatives A and B, surface flows may occur once again in some areas, producing a minor beneficial effect. However, only a monitoring program will be able to evaluate this effect adequately. There will be no adverse long-term effects to water, wetlands, or riparian areas or resources under the preferred alternative (A), the no-action alternative (B), or the mechanical/ suppression alternative (C).

Cumulative Effects Under All Alternatives

The affected geographic area, as described under Affected Environment, is extremely limited, and cumulative impacts could be intense. With water serving as an attraction to wildlife, stock, and humans to a degree and given that limited fire management activities planned in these areas, it is not likely that adverse cumulative effects would exceed negligible levels if activities in these areas are coordinated and protective measures are identified and applied.

Conclusion

Short- and long-term adverse effects to water, wetlands, and riparian areas of both agencies are likely to be negligible because of the low fire and fuels potential in most of these areas.

Wilderness

Affected environment

With passage of the 1964 Wilderness Act (16 USC 1131 et seq.), Congress declared that it is national policy to secure the enduring benefits of wilderness for present and future generations.

For the NPS, the enabling legislation creating El Malpais National (P.L 100-225, Dec. 31, 1987) states that the GMP shall review and recommend the suitability or non-suitability (of roadless areas of the Monument) for preservation as wilderness as described above. Most of the Monument has been found to possess wilderness characteristics, with

82,267 acres found as suitable. To date, no Congressional action has been taken on wilderness designation based on the suitability study (USDI NPS 1990); however, the NPS manages the area as designated wilderness.

The NCA includes two designated wilderness areas, the Cebolla Wilderness and the West Malpais Wilderness, created through Public Law 100-225. This law also requires that BLM review the Chain of Craters WSA and submit a recommendation to Congress on its suitability or nonsuitability as wilderness.

The Cebolla Wilderness is located on the east side of the NCA, consisting of 62,000 acres. There remain three small in-holdings totaling approximately 500 acres. The wilderness exhibits a diversity of resource values, from visual and other qualities (such as solitude and quiet) to varied wildlife habitats. Broken terrain, wildlife, vistas, and prehistoric and historic resources provide wilderness-style recreational experiences such as hiking, photography, backpacking, and primitive camping. However, the suppression of natural fires has resulted in vegetative type changes, increases in fuel load, and decline of biological diversity in general (USDI BLM 1999). The entire wilderness area is included in areas claimed by Acoma Pueblo and the Hopi and Navajo Tribes, with portions claimed by the pueblos of Zuni and Laguna (Akins 1993). The Cebolla Wilderness overlaps three grazing allotments, and thus, range improvements such as tanks, fences, troughs, and windmills are located in the area.

The West Malpais Wilderness is located in the central portion of the NCA and consists of approximately 39,800 acres. Human impacts in this area consist of temporary disturbances of soil and vegetation in camp areas and longer term impacts associated with livestock grazing improvements and access routes (USDI BLM 1999). This wilderness contains diverse resource values because of the varied landscape of cinder cones, lava flows, and sandstone bluffs and ridges. As with the Cebolla Wilderness, this area's vegetation is becoming stagnant and unhealthy. The natural fire regime of 2- to 10-year return interval before the 1800s was interrupted, resulting in fuel load increases and potential for destructive wildland fires. Grazing is authorized under House Report 96-617, along with vehicle routes authorized for allottees' access. There is a "trailhead/parking area" at the end of the Cherry-Stem road leading to the area known as "Hole-in-the-Wall."

Methodology

Available wilderness resource information was collected from each agency in the form of existing management plans and associated environmental documentation. This information provided the basis for assessing the effects on the wilderness character from each alternative over the short term and long term and cumulatively. The entire planning area for which a joint fire management program is being planned was considered, whether a designated wilderness or those lands under study for designation.

The intensity of effects is described in the analysis below using the terminology found under other selected impact topics of this document. The definitions are repeated here for convenience.

Negligible: An action that could cause a change to the wilderness character (that includes the natural physical landscape or cultural resource), but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could cause a change to the wilderness character (that includes the natural physical landscape or cultural resource), but the change would be small and, if it is measurable, it would be a small and localized consequence.

Moderate: An action that would cause some change to the wilderness character and associated values described above. The change would be measurable and would have a sufficient consequence to the resource but would be more localized.

Major: An action that would cause a noticeable change to the wilderness character (that includes the natural physical landscape or cultural resource). The change would be measurable and would have a substantial and possible permanent consequence.

Regulations and policies

The Wilderness Act (1964) along with standing agency policies discuss vehicle use in wilderness that is consistent with minimum requirements to be established in the Joint Fire Management Plan. Management must use the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish protection objectives in wilderness.

Impacts of Alternative A (Preferred)

Short-term adverse effects in wilderness areas resulting from managing wildland-fire-use fires (under prescription where such fires pose no threat to human life, property, or high-value resources on adjacent non-wilderness lands) will be very minor to negligible. The main disturbance may be an occasional. but short-duration, reconnaissance over-flight by fixed-wing aircraft or helicopter and some sporadic noise from authorized chainsaw use to protect boundaries of the fire area. However, with management constraints applied (i.e., light hand tactics, etc) to all wildland and/or prescribed fire operations within areas managed as wilderness, short-term adverse effects should remain negligible.

Long-term effects under the preferred alternative are predicted to be beneficial. Following a decade or more of periodic low-intensity wildland fires combined with selective prescribed fire treatment to accomplish fuels management objectives, these areas will see increased fire-tolerant native species diversity and frequency and overall vigor as fire is re-introduced to the landscape. This dynamic is consistent with other natural disturbance events within wilderness, and it is predicted that major beneficial effects will be realized. Among the benefits to the wilderness resource is allowing fire to once again play a critical role in shaping the structural (i.e., density) and functional (i.e., native species diversity) integrity within a fire-adapted, fire-dependent ecosystem. As wildland fire serves to regulate fuel loads downward to pre-settlement levels, future fire intensities will necessarily decrease, lowering smoke emissions and providing a greater margin of safety to wilderness recreational users.

Cumulative Effects

The affected geographic areas are wilderness and areas managed as wilderness as described above. Cumulative effects under the preferred alternative may include moderate increases in human wilderness use and uses under BLM grazing permits. Combined with activities with the implementation of the preferred alternative described above, there is anticipated to be an overall benefit to the wilderness resource if appropriate resource management measures are applied (i.e., responsible grazing practices and human use management by agencies in the affected areas).

Conclusion

Short-term and long-term effects are anticipated to be beneficial under the preferred alternative, particularly over the long term as the wilderness resource is enhanced in a major beneficial way by periodic fire as a natural disturbance force.

Impacts of Alternative B (No Action)

The short-term beneficial impacts under present BLM and NPS fire management programs are minor. Given the current and anticipated restrictions for mechanical fuels management strategies in wilderness, wildland fires ignited naturally may need to be managed under a narrower window of prescriptive criteria, particularly near agency boundaries. Without a joint fire management plan, management under this strategy will increase chances for minor adverse impacts to the wilderness resource because of a diminished level of pre-planned coordination resulting from separate agency management plans.

Long-term adverse effects to wilderness values would include some increased fuels buildups as a result of a lack of coordinated fuels management, resulting in the potential for higher intensity wildland fires and hence more suppression actions required. These actions in turn can undesirably alter features associated with wilderness character (quiet, solitude interruptions) and minimal trace of human presence.

Cumulative Effects

Other management activities combined with present fire management programs may result in minor to moderate adverse effects to wilderness values, especially if appropriate protective measures are lacking or not applied prudently.

Conclusion

Short-term adverse effects to wilderness areas have potential to be minor. Long-term adverse effects are predicted to be minor except in unusually severe fire seasons where adverse effects, without prior agency-coordinated fuels management or wildland fire presence has been limited, can be moderate or major.

Impacts of Alternative C

Landscape-level mechanical treatment strategies would be heavily restricted in designated wilderness and wilderness study areas managed by BLM and NPS. Therefore, the assessment of effect under this alternative concerning mechanical fuels reduction treatments, absence of prescribed fire and wildland fire suppression without effective joint agency coordination is that it would likely result in a net moderate or greater adverse effect wilderness character in the long term.

Cumulative Effects

Under the suppression portion of this alternative, the combined cumulative impacts (see other alternatives) would involve human-related presence and potential disturbance across the wilderness landscape, particularly near agency boundaries. Of concern here is the cumulative effects of unregulated motorized access during fire management operations and other administrative uses. In this case, the mitigating action is to assign a wilderness specialist (resource advisor) to the fire that will consult with the incident commander or equivalent.

Conclusion

Adverse effects will generally occur over the long term, without a coordinated effort to reintroduce fire back into a fire-dependent landscape. Moderate adverse effects to the wilderness character is a consequence of limited fire use and continuing fuels accumulations.

Air Quality

Affected environment

Under the Clean Air Act (1977) and Amendments, 125,130 acres are designated as Class I airshed; 86,760 acres are designated as Class II airshed; and 14,110 acres are designated as Class III airshed, all within the NCA. El Malpais National Monument is designated a Class II airshed.

The visual quality of the area in terms of visibility and public health is among the highest in the nation. This feature is important to visitation and recreation and therefore the tourist economy of the area. Smoke from fires in the Malpais, as well as construction-related activities and other sources, is generally a temporary phenomenon. Most prescribed fires occurring in the area are of several days' duration, and ventilation is generally good.

Methodology

Available information was obtained through interdisciplinary team meetings, including a representative from the New Mexico Environment Department Air Quality Bureau. This information provided the basis for assessing the effects to visibility and public and firefighter health from each alternative over the short and long term and cumulatively. The entire planning area for which a joint fire management program is being planned was considered, as were the impacts associated with other human activities and regional haze.

The intensity of effects is described in the analysis below using the terminology used under other selected impact topics of this document. They are repeated below for convenience.

Negligible: An action that could cause a change the natural physical resources (viewshed/airshed and visual qualities and the health impact of smoke), but the change would be so small that it would not be of any measurable or perceptible consequence to the viewshed or health.

Minor: An action that could cause a change to the natural physical resources (including values described above), but the change would be small, and if it is measurable, it would have a small and localized consequence to these values.

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Moderate:	An action that would cause some change to the natural physical resources (including values described above). The change would be measurable (i.e., violation of established air-quality-related standards) and would have a sufficient consequence to the viewshed or health but would be more localized.
Major:	An action that would cause a noticeable change to the natural physical resources and defined values. The change would be measurable and would have a substantial and possibly long-term consequence to the health of the local or area population.

Regulations and policies

The federal Clean Air Act (1963) and Amendments (42 U.S.C. 7401 et seq. As Amended) state that federal land managers have an affirmative responsibility to protect air-quality-related values from adverse impacts. This protection applies to both visibility protection (Class I and Class II airsheds) and public health. Wildland and prescribed fire activities conducted on BLM and NPS lands may affect air-quality-related values. Therefore, before undertaking any prescribed fire, a permit application is prepared that includes the location, size, type of fuels to be treated, estimates of emissions, modeling results showing plume direction, duration of burn, and whether air quality standards (including visibility) will be exceeded for any period of time. This information, together with timely notifications to the State Environmental Improvement Division, as required in the State Implementation Plan's approved Memorandum of Understanding with land management agencies will satisfy a portion of the compliance necessary under the Clean Air Act.

Impacts of Alternative A (Preferred)

Short-term impacts include temporary periods of reduced visibility in rural communities (with smoke emissions occasionally reaching the townsites of San Rafael and Grants-Milan) generally downwind from the planning area. Highways may become smoky for intermittent periods of time, and visibility may be impaired. Individuals living in close proximity to prescribed fire projects who suffer respiratory ailments may be affected for a few days. Scenic vistas, aesthetics (BLM Visual Resource Management), and other visibility-related recreational values may be impaired temporarily. However, management measures can be used, such as selecting good ventilation days, adequate and timely notifications through media, brochures and signs, and emphasizing "clean burns" (i.e., flaming combustion vs smoldering) that will mitigate many adverse smoke impacts over the short term. Another important mitigating strategy is mechanical thinning and fuels reduction, which produce negligible smoke except when piles are treated or broadcast burns are conducted in the off-season (fall, winter, early spring).

Long-term air quality impacts resulting from preferred management actions will become increasingly beneficial because of the overall reduction in fuels concentrations and resulting decreased emissions. This long-term impact in turn would create conditions where public health and visibility-related values in the area are significantly enhanced. It is anticipated that moderate to major benefits can result from a prudent, well-coordinated agency fire management program under a joint fire plan.

Cumulative Effects

Affected geographic areas of consideration include the planning area, Cibola County lands, the cities of Grants-Milan and San Rafael, and potentially the Albuquerque basin during periods when many wildland fires are burning in the region.

Cumulative effects may include smoke from other agency fires and regional haze, and stationary point sources in the area (gravel plants, manufacturing, etc.) may result in minor adverse effects to visibility. However, as described above, if appropriate pre-planning, on-site mitigating measures and coordination occur with other source entities, the cumulative effects will be minor with the preferred alternative.

Conclusion

Under the preferred alternative, adverse effects on air-quality-related values including visibility and health will likely be minor in the short term if appropriate control measures are coordinated and applied in a timely manner.

Long-term effects to air quality resulting from a joint fire management program will be beneficial, with the level of benefit dependant on fuels reduction and resultant fire intensity and smoke production. The potential is major benefit under Alternative A.

Impacts of Alternative B (No Action)

Short-term impacts under the no-action alternative are potentially increased emissions from larger areas of untreated fuels complexes (compared with Alternative A) under current agency fire plans. These emissions will result in a minor to moderate adverse impact to public health and visibility-related values but on an intermittent basis.

Short and long-term impacts include continued potential for high-intensity wildland fires during high-severity seasons, with resulting increased emissions periodically originating on agency lands. Coordination between the BLM and NPS would continue to be less than optimum, possibly resulting in some violations of the agreement with the State of New Mexico. However, mitigating actions to minimize smoke will continue under the no-action alternative, and adverse effects should be minor as fuels levels are slowly reduced.

Cumulative Effects

With the same general affected area as described for the preferred alternative, cumulative impacts will be more intense under the no-action alternative because of the increased potential for smoke emissions mixing with local and area source emissions. Adverse cumulative effects are anticipated at certain times of the year but would likely be minor.

Conclusion

There will be minor to moderate adverse short-term impacts resulting from implementation of the no-action alternative that are a result largely of more fuels and a lesser degree of interagency coordination. Long-term effects also will be minor, but gradually conditions will produce generally beneficial effects on the quality of air.

Impacts of Alternative C

Short-term adverse impacts to air quality values with a landscape-level mechanical fuels and thinning program are largely negligible with possible exception of minor emissions associated with pile burning.

Long-term adverse impacts, although minor, include increasing chances for smoke emissions from building surface fuels (debris, needle and leaf litter, stumps, and residual logs) caused by increases in back-logged fuels reduction activities (i.e., pile-burning).

Cumulative Effects

Cumulative adverse effects are negligible, as little to no smoke from agency fuels management activities would be produced. During pile burning, there may be an additive effect from other sources of smoke (simultaneous burning by other agencies including BLM and USFS or private landowners) that is adverse to air quality values but only for brief periods.

Conclusion

There will be negligible short-term, and potential minor adverse long-term, effects on air quality related values resulting from a mechanical fuels/wildland fire suppression program under Alternative C.

CULTURAL RESOURCES

Affected Environment

Cultural resources found in the planning area include archaeological, historic, and socio-cultural properties. The NCA attempts to protect a representative sample of the full array of cultural resources, both prehistoric and historic (USDI BLM 1992), whereas the NPS provides full and equal protection to all sites and features whether isolated occurrences (IOs) or complex structures (USDI NPS 1997).

Archaeological resources

Archaeological resources in the NCA and national monument range in age from Paleo-Indian (9500 BC) to recent historic. Most prehistoric cultural resources sites are artifact scatters that include chipped stone and/or pottery sherds. Many of these sites also include rubble mounds that result from the collapse of masonry or of jacal buildings. Some sites include buried features and midden deposits that may contain bone and charred vegetal materials relating to the prehistoric occupation. Only a few prehistoric sites in the NCA include standing architecture, and none of these include flammable wooden elements.

Historical resources and cultural landscapes

More recent historic sites often include flammable wooden elements; for example, remains of Navajo sweat lodges and brush corrals have been recorded. Historic homesteads and their associated features are often made partially or entirely of logs and lumber. Similarly, historic logging camps and sawmill locations often are marked by large piles of sawdust, scraps of lumber, and wooden features. In certain areas, pine trees have distinctive scars indicating that their inner bark was stripped away and used as a source of food by homesteaders or Native American peoples during times of famine.

El Malpais National Monument has an ongoing, proactive survey of NPS lands. An approximate 2% survey has been completed and recorded according to the Resource Management Plan (USDI NPS 1997). A more comprehensive survey is now under way. Recently completed work includes a State Highway Department assessment survey along State Routes 53 and 117 that border NPS lands. In addition, the Candelaria Pueblo and trail assessment proposal has assembled survey data.

Documentation

Because of the nature and sensitivity of cultural resource site locations, site maps, National Register documentation, photographic records, and drawings are not included here. Information is on file at El Malpais National Monument, Grants, and the Albuquerque Field Office, Albuquerque, New Mexico.

The intensity of effects is described in the analysis below using the same terminology as for other selected impact topics of this document. The terms are repeated below for convenience.

No Effect	There will be no short-term or long-term effect to cultural features, objects, or scenes resulting from activities under alternative being addressed.
No Adverse Effect	There could be an effect to cultural features, objects, or scenes, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the National Register of Historic Places.
Adverse Effect	There could be an effect, and that effect could diminish the integrity of the characteristics that qualify the property or scene for inclusion in the National Register.

Methodology

All available information on known cultural resources is referenced under "Documentation" above. Predictions about site impacts were based on consultations with agency cultural resource specialists, literature reviews, post-fire effects studies from other NPS areas, and previous monitoring of fire management activities in the planning area.

Regulations and Policies

Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470 et seq.), along with BLM and NPS Cultural Resource Management Guidelines and Policies (see Appendix B) require the consideration of impacts on cultural resources and associated materials listed on or eligible for listing on the National Register of Historic Places.

National Park Service

Before approving any agency fire management planning, the State Historic Preservation Officer (SHPO) must be consulted concerning any proposals that may affect a cultural property listed on or eligible for the National Register of Historic Places. Consultations required under Section 106 of the NHPA are conducted during the scoping process, with cultural resource representation from each agency on the Interdisciplinary Team providing specific input from knowledge of the planning area. When joint agreement is reached with the State Historic Preservation Office (SHPO), the planning consultation requirement will have been satisfied.

Bureau of Land Management

Compliance with the NHPA is governed by the *Protocol Agreement between New Mexico Bureau of Land Management and New Mexico State Historic Preservation Officer* (1997) under a national Programmatic Agreement. In the case of prescribed fire, the BLM may determine the appropriate level of inventory, National Register eligibility, and intensity of effect. If the proposed burn will not change the qualities that qualify any cultural property for the National Register, then the activity may proceed without prior SHPO consultation. However, if these conditions are not met, prior consultations with SHPO as described above are required.

Alternative A (Preferred Action)

Short-term and long-term impacts from human activities (i.e., line construction, thinning, helispot construction, etc) may disturb cultural features if routine protective measures are not employed. Fire crews also may collect artifacts from prehistoric and historic sites. Heating associated with the fire itself may cause smudging or other minor damage to artifacts or ruins. Sites or features that include flammable wooden elements can be damaged or completely destroyed by fire without appropriate mitigation (see below). With an agency cultural resource specialist directing on-site mitigating actions (see below), there will be no adverse effects resulting from wildland fire use, prescribed fire and non-fire treatments, or suppression actions under the preferred alternative.

Mitigation measures include various strategies for locating and isolating sites that are vulnerable to fire or to human activities associated with the burns, treating sites with approved ground-applied and noncorrosive retardants, removing heavy fuels that cause long-duration heating, temporary removal of cultural materials, and briefing fire crews about the need to protect any cultural resources encountered. Any or all of these measures would be executed under the supervision of a qualified cultural resource specialist. High-value cultural resources that are vulnerable to fire will be designated within FMU-1, where full suppression is required.

Cumulative Effects

The geographic affected area is generally that which supports vegetation capable of burning. Specific locations where cultural resources may be affected will be identified from compliance survey before project implementation. Cumulative effects under the preferred alternative include incremental human presence in or around sites and features. Visitors, local residents, and the general public may add cumulatively to fire management activities. However, it is predicted that under the preferred action, these effects will be steadily diminished by reduced fuels and consequently fuels reduction activities and/or aggressive suppression activities. Thus, under Alternative A there may be effects, but adverse cumulative effects are not anticipated if compliance and protection guidelines for all human activities in and around cultural resources are followed.

Conclusion

It is determined that no short-term or long term adverse effects to identified cultural resources are anticipated under the preferred alternative. However, moderate long-term beneficial effects can result from implementation of the preferred alternative because of the reduced fuel loadings in and around sites and features and therefore lower potential wildland fire intensity and severity in affected areas.

Alternative B (No Action)

There would be similar short-term effects (but no adverse effect) to the short-term activities described above for cultural resources under the preferred alternative (A). Mitigating actions that are established for each agency would continue for all proposed projects and for ongoing wildland fires in all FMUs.

A potential long-term adverse effect can result from allowing proportionately increasing fuel loads with a corresponding increase in the potential for high-intensity, stand-replacement crownfires. This impact may, in comparison to the preferred alternative, be potentially more damaging to cultural resources. However, if appropriate protective measures are employed during all planned and implemented fire management activities under this alternative, adverse effects (ground disturbance, erosion of sites or scenes) can be minimized.

Cumulative Effects

The affected geographic area is similar to Alternative A. No adverse cumulative effect to cultural resources would result from anticipated negligible human presence (including non-fire personnel and recreation users). However, as more survey information is collected and recorded, these potential impacts may require a reassessment of effect.

Conclusion

Under the no-action alternative, minor adverse short-term and long-term effects would likely occur and fuels build-ups resulting from a lower level intensity of fire and non-fire treatments around cultural features have potential for increased adverse effects to sites and/or features compared with a more extensive program under the preferred alternative.

Alternative C (Mechanical Fuels Reduction and Suppression)

Short-term impacts under the mechanical fuel reduction/suppression strategy include potential collection of artifacts by work crews and disturbance or even damage to archaeological features resulting from traffic and piling slash. As mentioned, survey and recording of sites is continuing, and a reassessment of impact potentials will be needed in the future. However, it is anticipated that there will be no adverse effect in the short term under appropriate mitigating actions.

Long-term impacts may relate to the relative absence of fire treatments under this alternative. Fine fuels and some larger woody fuels would not be mechanically removed, and consequently, wildland fires may be of higher intensity and severity than under a maintenance fuels management program where fire is used to accomplish objectives. Archaeological and historical surficial sites and features or scenes may be placed at slightly more risk from unwanted, higher intensity wildland fires and the associated suppression activities. However, no adverse effect to cultural resources or features is anticipated.

Cumulative Effects

No adverse cumulative effects related to human presence or future planned administrative actions are anticipated.

Conclusion

Short- and long-term adverse effects would be negligible to minor, depending on the amount and distribution of fuels over and near sites and features. Mitigation measures similar to those described under Alternative A could be implemented under this alternative to reduce adverse impacts. Therefore, it is anticipated that there will be no adverse effect to cultural resources, features or scenes.

AMERICAN INDIAN USES AND TRADITIONAL CULTURAL PRACTICES

Affected Environment

By law, the NCA, including the wilderness area and Monument lands, are to be managed in ways that accommodate the needs of traditional American Indian tribes and allow the continuance of traditional cultural practices (USDI BLM 1999).

The Zuni, Acoma, and Laguna tribes have ancestral roots in the area. Shrines, habitation sites, pilgrimage routes, and other features are important to these peoples. The Acoma recognize all prehistoric puebloan sites in this area as ancestral places. Plant collection also is practiced and may include herbs, nuts, boughs, and beeweed.

Sweat lodges, hogan remains, and traces of brush corrals of presumed Navajo origin also occur within the NCA. The volcanic terrain of the NCA and National Monument have mythological importance to the Navajo, and it is highly likely that places of religious practice or other importance occur here.

All of these groups have historically used the NCA and National Monument lands for traditional purposes such as gathering herbs, pine nuts, boughs, and beeweed and for hunting. The Navajo also have expressed a desire to collect fuelwood for domestic consumption in the NCA. Neither the BLM nor NPS attempts to actively manage these traditional uses. Instead, close coordination with the tribes is critical to maintaining the protection of these traditional lifeways and associated materials.

Ethnographic information is limited; however, the Monument currently is participating in a multi-park ethnographic overview and assessment being conducted by the NPS (USDI NPS 1997). A List of Classified Structures (LCS) is also incomplete; both ongoing works are on file at the El Malpais National Monument Headquarters, Grants, New Mexico.

The Malpais NCA includes archaeological and historic remains that were inventoried beginning in the 1940s and 1950s. The most recent survey in the NCA has been a proactive inventory intended to collect baseline information to improve management of the cultural resources. To date, intensive inventory information exists for approximately 2% of the area. Major recorded sites are listed and described in the Draft El Malpais Plan and Environmental Impact Statement, Albuquerque Field Office, Bureau of Land Management (1999).

Documentation

Any agency information related to location, character, or condition of any areas of use or traditional cultural practice is sensitive information and is on file in the respective agency offices listed above under "Cultural Resources."

It should be emphasized here that specific adverse and positive effects to American Indian uses and traditional cultural practices have not yet been identified, although it is acknowledged that such effects could occur under any alternative described below. The mitigation measures developed with affected tribes continues from good faith consultation and coordination, and will be continued into the future.

Methodology

A methodology similar to that used for the impact topic of vegetation was used to assess and predict impacts. Tribes in the area are cooperating with the agencies in an ongoing information exchange that provides the basis for agency protection protocols. As a matter of routine, tribal officials will be contacted well in advance of planned fire management project work if these traditional use areas are included in the planning area.

The intensity of effects is described in the analysis below using terminology found under the "Cultural Resources" impact topic.

Regulations and Policies

The Native American Graves Protection and Repatriation Act (NAGPRA), American Indian Religious Freedom Act, and NHPA and enabling legislation creating the National Monument and NCA mandate the access to and protection of religious and subsistence sites and activities.

Impacts of Alternative A (Preferred)

Short-term and long-term effects may include human presence in or around ceremonial sites, travel routes, or scenes and temporary disruption of hunting as a result of smoke from fuels management projects and wildland fire operations. Any sites where plant materials are gathered could be affected adversely if fire personnel are unaware of these areas and their significance. If protection measures are taken before and during fuels management and wildland fire use activities in all FMUs, then no adverse short-term or long- term impacts will result.

Some beneficial effects potentially could result from careful application of prescribed fire and wildland fire use actions in areas known to support Native American uses and values, particularly with respect to nutrient availability to native plants of interest to tribes. However, further supporting evidence of this statement is needed.

Mitigating actions to ensure protection of these values are such that close coordination and communication with the respective tribe(s) may be required before undertaking any project. For wildland fires for resource benefit on agency lands, consultation and communication regarding the identification of any sites or objects in areas where fire is allowed to function naturally and appropriate protection measures before fire season is important.

Cumulative Effects

The affected geographic area considered is limited to those areas identified by tribes and that support vegetation capable of burning. Potential adverse cumulative effects could result if, in conjunction with other intrusive activities (recreational users, local public, etc.), appropriate mitigating (protective) measures are not taken. However, establishment of a more diverse ecosystem favoring native rather than exotic species may enhance traditional plant gathering and hunting activities and ameliorate cumulative effects.

Conclusion

Under the preferred alternative, there will be no foreseeable adverse short-term and long term impacts resulting from the preferred alternative, if prudent and timely mitigation measures, as discussed above, are adopted and followed.

Impacts of Alternative B (No Action)

The short-term impacts would be occasional intrusions into sensitive areas related to fire suppression and prescribed fire activities, similar to Alternative A. However, under Alternative B, the suppression activities would likely occur on a reactive basis with little or no opportunity to coordinate their timing with the tribes. No adverse effects are anticipated in the short term.

Long-term effects resulting from the greater potential for higher severity wildland fires may be alteration or damage to areas where cultural practices take place if appropriate preventive measures are not taken. If fire crews are briefed properly before they enter these areas, no short- or long term adverse effects would likely occur. Conversely, there is potential for moderate beneficial effects to the landscapes from the stimulation of native vegetation that is significant to tribal uses from periodic low-intensity surface fires combined with adequate moisture.

Cumulative Effects

Cumulative effects would involve the presence of both non-fire (agency personnel, ranchers, public visitors) and wildland fire personnel in the affected areas, and if not personnel are not advised before entry, areas that may not be known would have greater potential for adverse impacts. However, it is anticipated that no cumulative adverse effects will occur within known traditional tribal areas given regular information exchanges and consultation with the affected tribes.

Conclusion

There will likely be no short-term and long-term adverse effects associated with Alternative B.

Impacts of Alternative C

The short-term effects are anticipated to be similar to those of the preferred alternative; that is, human presence within traditional use or cultural practice locations is likely to be the same level and intensity.

Long-term adverse effects to these areas without the benefit of cyclic fire visits may result from the implementation of this alternative. Native vegetation, as discussed above, may suffer long-term productivity setbacks without fire triggering a flush of plant nutrients. Therefore, potential adverse impacts to the vegetative component of these use areas is possible.

Cumulative Effects

As increased and ongoing consultation and coordination between the NPS, BLM, and affected tribes occurs regarding the potential cumulative effects from wildland and prescribed fire operations, public use, and other activities that may within the affected areas, no adverse effects will be anticipated.

Conclusion

Under Alternative C, no short-term and minor to moderate long-term adverse effects will be incurred on traditional use or cultural practice areas without the beneficial effects of fire on the fire-adapted native vegetation.

SOCIOECONOMIC RESOURCES

Affected Environment

The BLM's Draft El Malpais Plan and Environmental Impact Statement (1999), p. 3-38, describes and illustrates the ethnic origins, employment by industry, and income factors for the area represented by the Joint Plan. It also points up the importance of recreation and tourism to the area now that the once-booming uranium-based economy has declined significantly. Small business concerns in the Grants-Milan area can be affected both directly and indirectly from operations guided by the Joint Fire Management Plan.

As described in the General Management Plan and Environmental Assessment for El Malpais National Monument (Draft USDI 1990), it is believed that Cibola County has reached the end of its period of population loss. The region and the state are both expected to realize similar gains in population over the remainder of the century. Thirty-seven per cent of Cibola County residents consider themselves to be Hispanic and nearly twenty-six per cent of the County are Native American.

El Malpais National Monument is part of a geographically extensive network of unique southwestern parklands that will be connected by a designated touring route known as the Masau Trail. In addition, the city of Grants supports more than 30 restaurants, as well as gasoline stations, gift shops, a museum, clothing stores, sporting goods dealers, and banks. Medical facilities; a prison; and federal, state, and local government offices (including a multi-agency Visitor Center along I-40) also are located in and around Grants.

With rural residential populations increasing in and around the planning area, the analysis also considered the effects of any wildland or prescribed fire escapes on affected communities under each alternative.

Documentation

See the citations above.

Methodology

Much of the basis of the discussion of the impact category of socioeconomics originates from empirical data, visitor use statistics maintained by NPS, and law enforcement and other reports on file with BLM Field Office. This information is valuable in assessing the relative effects of each alternative.

The intensity of effects is described in the analysis below using the same terminology as under other selected impact topics of this document. They are repeated here for convenience.

Negligible: An action that could cause a change to socioeconomic values (land use, local or area economy), but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could cause a change to socioeconomic values (see above), but the change would be small, and if it is measurable, it would be a small and localized consequence to these values.

Moderate: An action that would cause some change to socioeconomic values (see above). The change would be measurable and would have a sufficient consequence to the area population but would be more localized.

Major: An action that would cause a noticeable change to socioeconomic values. The change would be measurable and would have a substantial and possible permanent consequence to the local or area population.

Regulations and Policies

Refer to the Draft El Malpais Plan and Environmental Impact Statement (1999) and the General Management Plan and Environmental Assessment, Wilderness Suitability Study, El Malpais National Monument (Draft 1990).

Impacts of Alternative A (Preferred)

Short-term adverse effects of the preferred alternative involve smoke emissions during wildland fire or prescribed fire operations. Business in the Grants area could be impacted temporarily by smoke in the area, but this is likely negligible to minor and of short duration if the best available control measures are applied.

An element of risk to surrounding residents exists with any uncontrolled escapes resulting from prescribed fire or wildland fire use incidents. However, with notification and evacuation plans in place, public safety is enhanced. Structures found to be indefensible (i.e., lack of fuel breaks, narrow roads that may place firefighters and equipment at risk because of no escape routes, etc.) may be abandoned by fire crews for other structures that are more protected. Therefore, protection from short-term adverse effects on the community from such escaped fires may or may not be possible.

Long-term impacts will be largely beneficial on the local economy as forest and rangeland ecosystems become more sustainable and recreational and scenic values are enhanced. It also is anticipated that negligible adverse effects to the socioeconomic environment in the area will result from implementation of the joint fire management program. Protection of communities in the area will depend on the level of fuels reduction and defensible space created around structures in case of escaped fires. It is understood that under the preferred alternative, an aggressive joint agency program of fuels management eventually will lower the potential for future wildland fires to escape, and therefore, major benefits to community safety and protection are possible.

Cumulative Effects

The affected geographic area is Cibola County, including Grants-Milan, San Rafael, and outlying communities and the joint agency planning area. Cumulative impacts to the local economy again are beneficial because of overall steady improvement to ecosystem health and improved attraction of the recreational resource in the planning area.

Conclusion

Under the preferred alternative, no adverse short-term or long-term effects will result to the socioeconomic environment. There is predicted to be a moderate beneficial effect in the long term, perhaps 15 to 20 years after program implementation.

Impacts of Alternative B (No Action)

Short-term adverse impacts may vary with beneficial effects because of the existing influence of increases in fuel loads combined with a high-severity fire season; suppression actions during the summer months may result in slight beneficial impacts on local businesses (food service, lodging, hardware). Escaped fires under this alternative will be somewhat more risky to community safety as these fires potentially would have higher resistance to control. Adverse effects from this scenario are moderate to potentially major over short time frames.

Long-term impacts to the local economy may include loss of some grazing potential; increased fuels may result in longer term suppression actions, causing some beneficial business spurts, but they may affect tourism adversely. Burned-over hunting areas may cause decreased hunting demand or grazing potential (NCA) for both short and long term, depending on severity and extent.

Cumulative Effects

Adverse cumulative effects under the no-action alternative would be a predicted decline in real estate values with high-severity wildland fires in and around wildland-urban developments, combined with increasing rural development and an off-setting possible beneficial effect not related to the joint wildland fire management program. Therefore, the net adverse cumulative effect will likely be negligible under the no-action alternative.

Conclusion
For the short-term, there could be a minor beneficial socioeconomic effect with a possible long-term minor adverse effect depending on the severity of future wildland fire seasons.

Impacts of Alternative C

Short-term impacts to local economic health are similar to those under Alternatives A and B, except that prescribed fire smoke impacts to the local economy would not be a factor.

The risk to communities from wildland fires escaping will be comparable in the short term because of a continuing fuels problem compared with the preferred alternative. However, unless a concentrated and massive mechanical fuels reduction and thinning program is implemented and sustained around the wildland-urban intermix, long-term risks and potential adverse effects to community stability may increase dramatically. Also, long-term adverse effects from a landscape-level mechanical fuel reduction and suppression strategy will likely result in a less vigorous vegetative community without periodic fire. This may impact long-term wildlife population dynamics, potentially adversely effecting hunting and visitor wildlife viewing opportunities. This could indirectly effect the local economy adversely, although to what degree is not known.

Cumulative Effects
The potential would remain for unwanted and destructive crownfires as fuels continue to build in areas that have not been treated by the mechanical thinning program. During years when treatment funding is low, more back-log fuels accumulate, adding to the existing fuels problem. This effect would produce results similar to those described in the cumulative effects discussion above under the no-action alternative.

Conclusion
Short-term adverse effects under this alternative may be moderate to communities at risk from escaped wildland fires during severe fire seasons. Long-term adverse effects to communities from escaped wildland fires could be major without a concerted and sustained fuels management effort. Without periodic prescribed fire applications over the long term, vegetation will likely decrease in vigor, producing adverse effects of unknown intensity to the local economy.

RECREATION RESOURCES

Affected Environment

The NCA and National Monument provide diverse and unique opportunities for recreation. The BLM Ranger Station along State Route 117 is collecting data on visitation, as is the El Malpais National Monument Headquarters in Grants. Visitor and recreation users come from a variety of geographical locations: most of the United States and Europe, as well as many from the Albuquerque and Grants areas (USDI BLM 1999).

The planning area is unique from the wilderness resource aspect. The BLM manages two designated wilderness areas (West Malpais and Cebolla), and the NPS manages a WSA as designated wilderness under the General Management Plan (USDI 1990) within El Malpais National Monument. This management program is discussed in further detail under the Wilderness Impact Category. However, wilderness recreation opportunities are increasing and thereby will likely contribute to potential cumulative effects with the joint agency fire management program.

Developed recreation sites such as campgrounds, trailheads, and picnic areas provide an array of facilities both on the NCA and National Monument Recreational use categories (not separated by agency) include camping, hiking, backpacking, picnicking, sightseeing, photography, offroad vehicle use, bicycling, horseback riding, caving, climbing, cross-country skiing, hunting, pack trips, trapping, target practice, and solitude. According to the Draft EIS (USDI BLM 1999), both management areas are expected to see an increase in visitation exceeding 207,000 during the year 2000.

Most recreational users stay close to pavement or well-graded roadways, with a minority venturing out on primitive roads or hiking in the backcountry. The network of roads determines how accessible different recreational opportunities are to the visitor. The BLM uses a system called the Recreational Opportunity Spectrum (ROS) to evaluate the effect of access on the various recreational opportunities. The ROS system provides a framework for classifying and defining types of outdoor recreation environments, activities, and experience opportunities (USDI BLM 1999). These are discussed in detail within the Draft El Malpais Plan and EIS (1999).

The area in and around the El Malpais is based in a rich natural and cultural heritage of west-central New Mexico. Many recreational attractions exist within an 80-mile radius of the Monument. The NPS has adopted an area-based, selected park visitation comparison model; the data acquired from visitor counters in key locations in the Monument is one tool being used by management to characterize changes in visitation patterns in the park.

Methodology

The intensity of effects is described in the analysis below using terminology found under other selected impact topics of this document. They are repeated here for convenience.

Negligible:	An action that could cause a change to the recreation and associated physical resources (campgrounds, picnic areas, scenic vistas, trails, etc.), but the change would be so small that it would not be of any measurable or perceptible consequence to resource.
Minor:	An action that could cause a change to the recreation and associated physical resources (campgrounds, picnic areas, scenic vistas, trails, etc), but the change would be small, and if it is measurable, it would be a small and localized consequence.
Moderate:	An action that would cause some change to the recreation and associated physical resources (campgrounds, picnic areas, scenic vistas, trails, etc). The change would be measurable and would have a sufficient consequence to the resource but would be more localized.
Major:	An action that would have a noticeable change to the recreation and associated physical resources (campgrounds, picnic areas, scenic vistas, trails, etc). The change would be measurable and would have a substantial and possible permanent consequence.

Regulations and Policies

Refer to the Draft El Malpais Plan and Environmental Impact Statement (1999) and the General Management Plan and Environmental Assessment, Wilderness Suitability Study, El Malpais National Monument (Draft 1990).

Impacts of Alternative A (Preferred)

Short-term impacts to the recreational resource include periods where use patterns may be temporarily disrupted as a result of wildland fire operations and/or the effects of smoke. Some scenic vistas [aesthetics (BLM Visual Resource Management)] may be perceived by recreational users as being negatively affected by recent burns. However, with a timely information dissemination approach by the agencies both before prescribed fires are ignited and during wildland fires, any adverse effect to recreational opportunities should be negligible to minor.

Long-term impacts to the recreation resource are viewed as beneficial. As increased vegetative diversity, increased plant vigor, improved wildlife habitat, and gradually improved scenic values occur, the quality of the recreational environment will increase. It is anticipated that moderate to major beneficial effects will result with the long-term (estimated 10 years or more) implementation of the preferred alternative.

Cumulative Effects

The affected area considered here is generally the entire joint planning area of both agencies, particularly where recreation facilities and access routes are located. Cumulative effects would include the fire management program effects and the effects of improved site facilities and associated visual qualities and improved recreational management by the agencies. Overall, the cumulative effects are anticipated to have moderate beneficial effects to the recreation resource in the planning area.

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Conclusion
Implementation of the preferred alternative will cause negligible to minor short-term but moderate to major beneficial long-term effects to the recreation resource.

Impacts of Alternative B (No Action)

Short-term impacts, similar to those discussed in Alternative A, include temporary closures of areas during suppression actions for safety concerns or visibility impacts resulting from periods of smoke in or around recreational sites or travel routes.

Long-term impacts under the no-action alternative are gradual decreases in the quality of recreational lands, including those managed as wilderness. Lower plant diversity and vigor, along with associated degraded scenic values, may result from higher severity wildland fires. Beneficial effects over the long term may be realized, but with limited prescribed fires under the no-action alternatives, results will be slow.

Cumulative Effects
Cumulative impacts are similar in affected area, type of activities, and scope of effects to the preferred alternative. Potential, but sporadic, decreases in recreational visits to the planning area as a result of high-intensity wildland fires in areas that have not received adequate fuels treatments may combine with positive effects described under Alternative A but could result in a net negligible effect.

Conclusion
Short- and long-term minor adverse effects with few or negligible beneficial effects will be the outcome to recreational resources under the no-action alternative.

Impacts of Alternative C

The short-term impacts to joint agency recreational resources are temporary local disturbances associated with mechanical fuels management, increased noise from chainsaws, and temporary visual impairments from fuel wood removal or other ground disturbance.

Long-term adverse effects are related to the relative minor role that fire will play in these fire-dependant ecosystems. As such, vegetative recovery and vigor without this periodic fire may affect scenic qualities over a long time span (greater than 10–20 years).

Cumulative Effects
Cumulative effects are continued fuels buildups because of the sheer size of the joint management area, the chances of human-caused ignitions in untreated areas becoming disruptive, and damaging wildland fires. These unwanted fires may be difficult to suppress and may leave large scars on the landscape for some years. This effect, combined with the above-mentioned recreational management changes, patterns of use, and other factors, may result in a minor adverse cumulative effect.

Conclusion
Short-term and long-term adverse effects under the mechanical thinning/wildland fire suppression alternative (C) will range from negligible to moderate with few if any visible benefits realized.

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APPENDIX A. GLOSSARY

This appendix contains a list of definitions found in the Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide. (NIFC, Boise, ID, June 1998).

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire-use objectives.

Fire Management Plan. A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land-use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch, prescribed fire plans, and prevention plans.

Fire Management Unit. Any land management area definable by objectives, topographic features, access, values to be protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMUs are delineated in FMPs. These units may have dominant management objectives and preselected strategies to accomplish these objectives.

Holding Actions. Planned actions required to achieve wildland and prescribed fire management objectives. Specific holding actions are developed to preclude fire from exceeding the MMA (or allowable area).

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Management Action Points. See Trigger Points.

Maximum Manageable Area. The firm limits of management capability to accommodate the social, political, and resource impacts of a wildland fire. Once established as part of an approved plan, the general impact area is fixed and not subject to change. If MMAs are developed after ignition, they will be defined during the Wildland Fire Implementation Plan Stage III process. In the event a fire occurs in a preplanned MMA and the local unit determines that this MMA is not the best-suited alternative for present conditions, a new MMA can be developed as part of the Stage III process. When this occurs, the Stage III MMA becomes the firm limits of the fire and is fixed.

Mitigation Actions. Those on the ground activities that will serve to increase the defensibility of the MMA; check, direct, or delay the spread of fire; and minimize threats to life, property, or resources. These actions will be used to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or resources, create "blacklines" through controlled burnouts, and to limit fire spread and behavior.

Preparedness. Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Prescribed Fire. Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met before ignition.

Prescription. Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Seral. An ecological condition of vegetation maintained primarily by disturbance events (i.e., periodic fires).

Trigger Points. Either geographic points on the ground or specific points in time where an escalation or alteration of management actions is warranted. These points are defined and the management actions to be taken are clearly described in an approved Wildland Fire Implementation Plan (WFIP) or Prescribed Fire Plan. Timely implementation of the actions when the fire reaches the action point is generally critical to successful accomplishment of the objectives.

Wildland Fire. Any nonstructure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

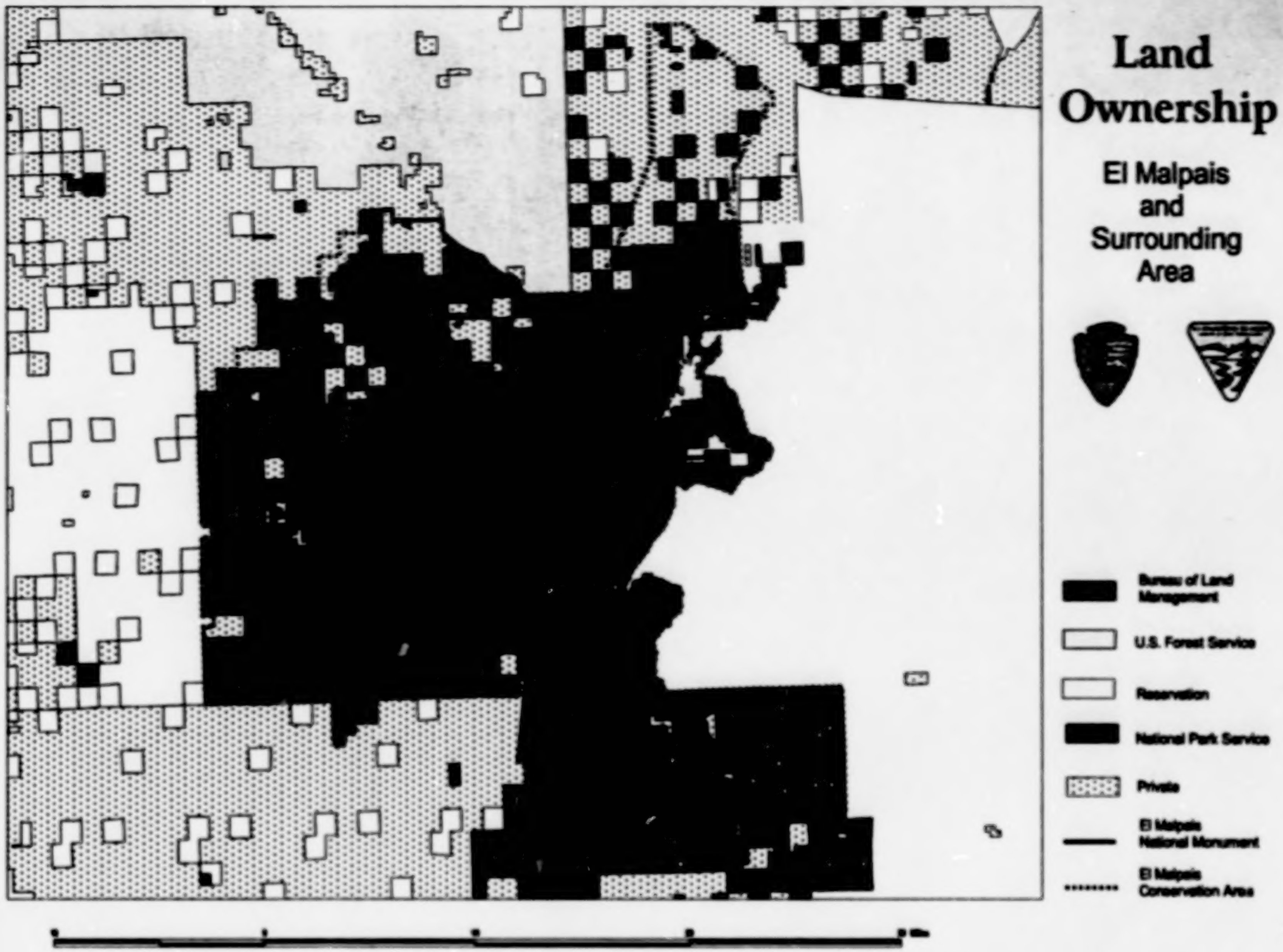
Wildland Fire Implementation Plan. A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (i.e., fires managed for resource benefits will have two or three stages of the WFIP completed, whereas some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Situation Analysis. A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Suppression. An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration but minimize the loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

Wildland Fire Use. The management of naturally ignited wildland fires to accomplish specific, prestated resource management objectives in predefined geographic areas outlined in FMPs. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use," which is a broader term encompassing more than just wildland fires.

APPENDIX B. LAND OWNERSHIP



Land Ownership

El Malpais and Surrounding Area

Bureau of Land Management
U.S. Forest Service
Reservation
National Park Service
Private
El Malpais National Monument
El Malpais Conservation Area

No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

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APPENDIX C. APPLICABLE LAWS, EXECUTIVE ORDERS, BUREAU OF LAND MANAGEMENT AND NATIONAL PARK SERVICE POLICIES

FEDERAL LAWS

Archaeological Resources Protection Act of 1979, as amended
PL 96-95, 93 Stat 721, 16 USC 470a et seq.

Antiquities Act of 1906
PL 59-209, 34 Stat 225, 16 USC 431—433
43 CFR Part 3—Preservation of American Antiquities

Bald and Golden Eagle Protection Act
54 Stat 250, 16 USC 668 et seq., originally enacted in 1940
PL 86-70, 73 Stat 143 – June 25, 1959
PL 87-884, 76 Stat 1246 – October 24, 1962
PL 92-535, 86 Stat 1064 – October 23, 1972

Clean Air Act and Amendments of 1977 and 1990
PL 96-95, 91 Stat 685
PL 95-1090, 91 Stat 1399
PL 101-549

Endangered Species Act of 1973, as amended
PL 93-205, 87 Stat 884, 16 USC 1531 et seq.
PL 94-325, 90 Stat 724, as amended June 30, 1976
PL 94-359, 90 Stat 911, as amended July 12, 1976
PL 95-212, 91 Stat 1493, as amended December 19, 1977
PL 95-632, 92 Stat 3751, as amended November 10, 1978

Federal Water Pollution Control Act of 1972 (Clean Water Act)
33 USC 1251-1265, 1281-1292, 1311-1328, 1341-1345, 1361-1376; 86 Stat 816, as amended
PL 92-500, 86 Stat 877, 33 USC 1341 et seq.
1987 Federal Water Quality Act

National Historic Preservation Act of 1966, as amended
PL 89-665, 80 Stat 915-919, 16 USC 470 et seq.
PL 91-243, as amended
PL 93-54, as amended
PL 94-422, Title II, as amended
PL 94-458, as amended
PL 96-199, as amended
PL 96-244, as amended
PL 96-515, 94 Stat 2987, as amended December 12, 1980
36 CFR Parts 60, 61, 63
36 CFR Part 800 – Protection of historic and cultural properties
36 CFR Part 800 Appendix A: Guidelines for making "adverse effect" and "no adverse effect" determinations for archaeological resources in accordance with 36 CFR Part 800

National Park Service Authorities Act
PL 94-458; 16 USC 1a et seq.

National Park Service Organic Act of 1916 (Organic Act)
PL Chapter 408, 39 Stat 535 et seq., 16 USC 1
PL 64-235, 16 USC ss1, 2-4, as amended

EXECUTIVE ORDERS

E.O. 11593; Protection and Enhancement of the Cultural Environment
36 FR 8921; May 13, 1971
36 CFR Part 800 – Procedures for the Protection of Historic and Cultural Properties

FEDERAL POLICIES

Federal Wildland Fire Policy (1995)

National Park Service

NPS Wildland Fire Policy, DO #18 (1998)
16 USC 1-4 is the legal authority for this policy

Each park with vegetation capable of burning will prepare a fire management plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities

Bureau of Land Management

BLM Handbook 9211-1 (Draft 1997)
16 USC 1-4 is legal authority

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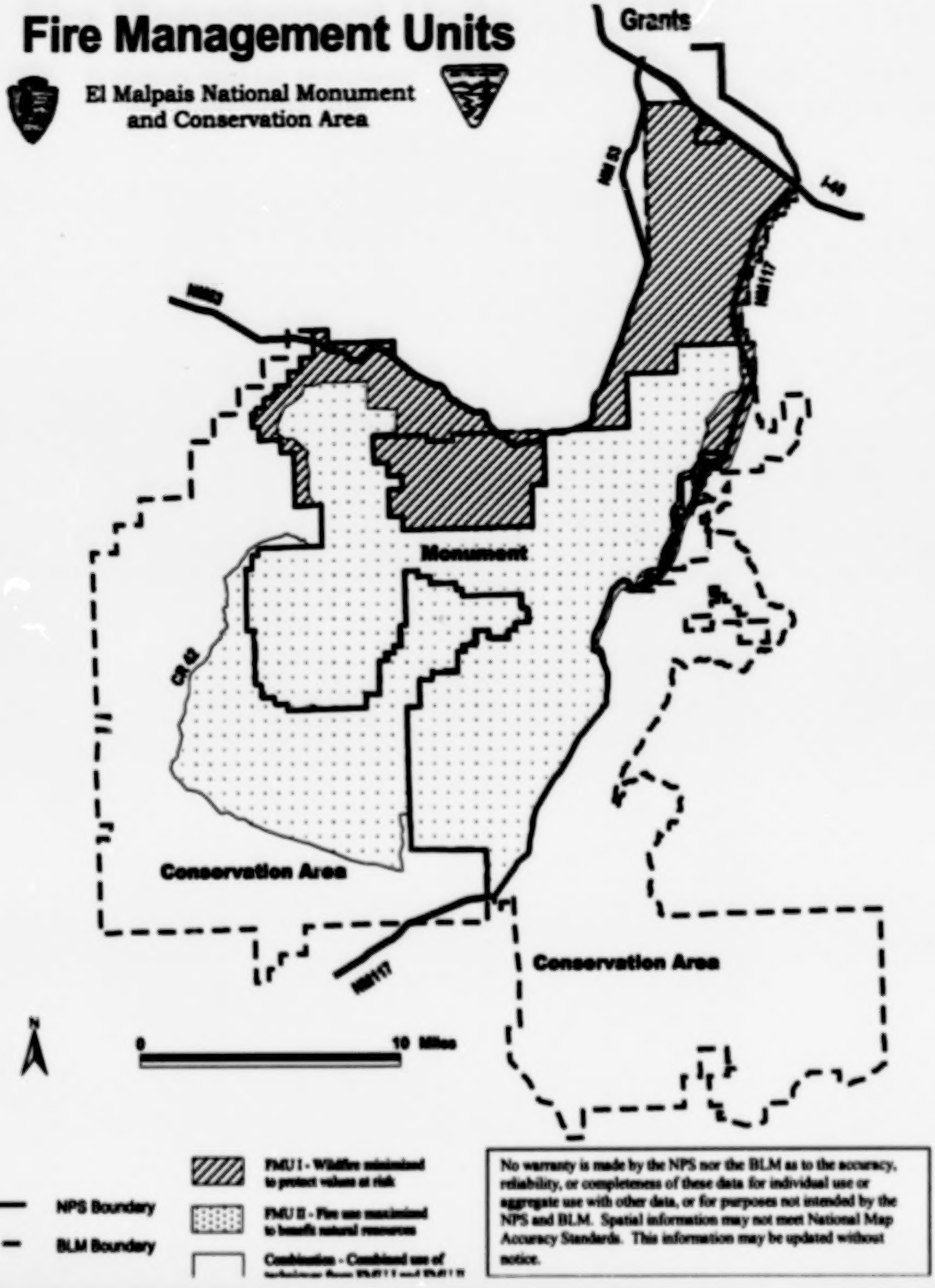
APPENDIX D. FIRE MANAGEMENT UNITS


Fire Management Units
El Malpais National Monument
and Conservation Area
Grants
NM 53
I-40
NM117
NM53
Monument
CR 42
Conservation Area
Conservation Area
NM117
N
0
10 Miles
FMU I - Wildfire minimized to protect values at risk
FMU II - Fire use maximized to benefit natural resources
Combination - Combined use of techniques from FMU I and FMU II
NPS Boundary
BLM Boundary

No warranty is made by the NPS nor the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS and BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

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